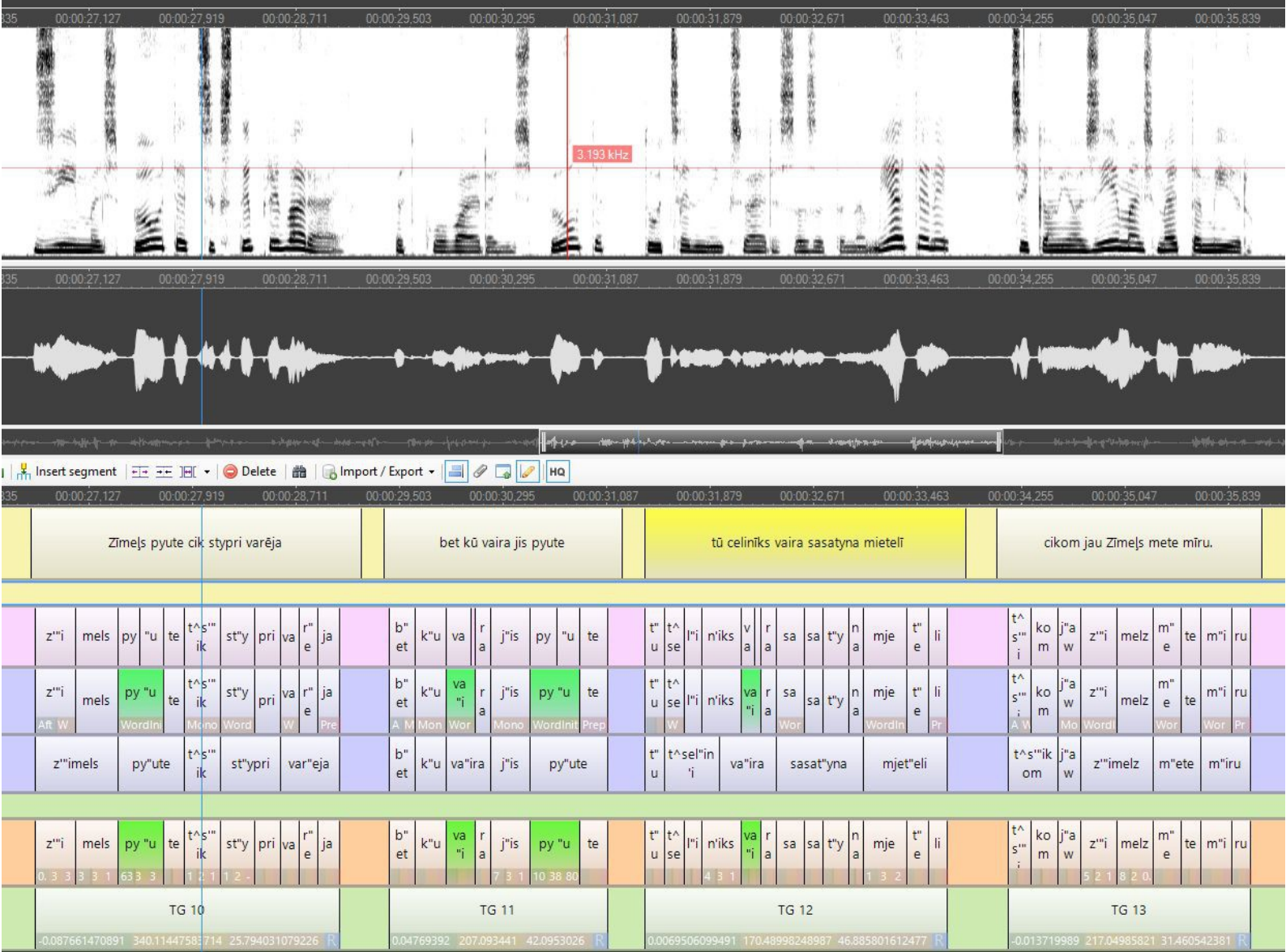
Katarzyna Klessa

ANNOTATION PRO

Enhancing analyses of linguistic and paralinguistic features in speech



Katarzyna Klessa

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Enhancing analyses of linguistic and paralinguistic features in speech

ADAM MICKIEWICZ
UNIVERSITY
IN POZNAŃ

Poznań 2016

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Introduction

Annotation Pro is a modern, convenient software tool designed for use in research and development studies by professional linguists, phoneticians, speech technologists, and engineers dealing with speech analysis and technology tasks in a wide sense.

As its primary functionality, the program provides a flexible environment for speech annotation, i.e. time-aligned transcription of speech. Apart from this, Annotation Pro's native functionalities include support for automatic annotation mining, as well as options for conducting perception-based experiments with the use of both discrete and continuous rating scales. By offering the possibility of graphical representation of any two-dimensional feature space, the software extends the potential of a typical multi-layer annotation system. For example, it enables annotation of evidential information or emotions in speech, i.e. features difficult to define in an unambiguous way, in clear terms suitable (and sufficiently precise) for annotation specifications based on sets of explicit verbal or numerical tags. Additionally, the program provides a perception experiment framework aimed primarily (but not exclusively) at testing hypotheses related to continuous and non-categorial features or rating scales (e.g., Wagner, 2012; Klessa et al., 2015). To enable flexible extension of the program's functionality so as to provide any additional options desired by the user, a plugin architecture has been developed.

Annotation Pro is a freeware software tool for research purposes. The current version of the program is available for download at: http://annotationpro.org/.

Annotation Pro was designed with a view to enabling effective annotation and simple perception tests for the purposes of analysing both linguistic and paralinguistic features within one common framework. As a universal and language-independent tool, the program can be applied to data from various languages (see for example: Gibbon et al., 2014; Czoska et al., 2015; Bigi et al., 2015; Beermann et al., 2015; Klessa et al., 2016). The annotations can be typed using any of the font families available and installed in the Windows system (including the IPA phonetic font). The main objectives adopted for the software's design were to provide support for speech annotation for a wide range of purposes, including those typically technological (e.g., naturally-sounding speech synthesis, automatic speech or speaker recognition) as well as those focused on the

psychology of interpersonal communication, and basic phonetic-acoustic research tasks (Klessa et al., 2013).

The following features were considered to be essential at the stage of software design and have been included as part of the implementation of Annotation Pro described further in this book:

(1) a simple and user-friendly interface, easy installation and configuration;
(2) support for multi-layer, synchronised annotation with precise and easily adjustable segment boundary placement;
(3) user-defined graphical representations of feature spaces and rating scales based on .jpg images uploaded by the user;
(4) the option of applying user-defined feature spaces and rating scales represented as images for both annotation purposes and perception tests;
(5) the ability to use complex annotation tags (e.g., for two-dimensional features or combining features of different types);
(6) an integrated plugin architecture enabling the extension of the program's native functionality.

Apart from time-aligned speech sound annotation, Annotation Pro can be used as a framework for text annotation (e.g. morphological glossing) because it may be used with textual data only, without any sound file, although the definition of annotation layers and segments in Annotation Pro file format is very general, and thus all linguistic parameters of segments need to be defined by the user, unlike in some tools specifically dedicated to text annotation, such as TypCraft (Beermann & Mihaylov, 2014). It is however possible to perform simple text annotation tasks successfully with Annotation Pro, and more importantly, to exchange data with text annotation tools for the sake of extending the scope of analyses.

The program was created using C# based on the Microsoft .NET Framework. Annotations are saved to the program's native format XML-based files with *.ANT. Technically, the *.ANT format is a .ZIP archive, containing the annotation file in an XML-based format. It may also include other files, such as media files, e.g. recordings in wave format. Alternatively, plain XML files with the *.ANTx extension can be used to save annotations, which may sometimes be more convenient for the needs of data exchange

with other annotation tools (Bigi & Klessa, 2015) or for integrating Annotation Pro with relational databases (Klessa & Wicherkiewicz, 2015; Wagner et al., 2016).

Extensive support for import/export operations has been one of the core features of Annotation Pro since the very beginning. Considering the variability of available software tools, it was regarded as essential to provide possibilities of exchanging annotation data between Annotation Pro and other popular programs dedicated to speech annotation and linguistic analyses of spoken language data, such as Praat (Boersma & Weenink, 2013), ELAN (Wittenburg et al., 2006), Wavesurfer (Sjölander & Beskow, 2000) and Transcriber (Barras et al., 2001). For the purpose of supporting automatic time-alignment, data syllabification or additional visualisation, export and import options to/from SPPAS (Bigi, 2015) have been included, which makes it possible, for example, to use annotations automatically generated based on models for several languages inside Annotation Pro. Other built-in options enable import/export from/to plain text TXT format and CSV table format, which may be useful for exporting data to calculation spreadsheets for further external statistical analyses or importing orthographic transcriptions to annotation layers (especially in the case of read speech or other types of speech with available transcripts).

The audio file format supported by Annotation Pro is the WAV mono or stereo format (see the Application Status section below for details of supported sampling frequency and PCM values).

A powerful enhancement to Annotation Pro's built-in functionality is the possibility of extending its native functionality with plugins. Thanks to plugin architecture it has become possible to flexibly add new features or modify existing ones. A number of ready-to-use plugins are available for free download (see: http://annotationpro.org/plugins/ for downloads and more information). Plugins can be used to perform practically any type of action for a single file or file collections, such as editing layers, segments, labels, calculating statistics based on the annotations, and many others. For example, plugins can be used to perform automatic annotation mining for speech timing analyses as in the Annotation Pro+TGA plugin (acceleration and deceleration patterns in speech as proposed by Gibbon, 2013; Klessa & Gibbon, 2014) or the SRMA plugin (analysis of speaking rate moving average useful in studies of temporal convergence in speakers, as in Karpiński et al., 2014; cf. also Kousidis, 2010) or to extract information obtained with graphical representations of the feature space (the 'Assign labels to polygon areas'

plugin, used by e.g. Głowacka, 2015). Plugins can be modified or created in any notepad as C# scripts (.cs) with the use of classes and functions whose detailed descriptions are available at http://annotationpro.org/api/.

In this book, the main features of Annotation Pro are presented in detail along with usage-oriented descriptions of the available options. The feature descriptions and guidelines focus on the user interface of the program; research study descriptions may be found in publications listed in the References section below, as well as online in the Publications & Cooperation section of the program's website: http://annotationpro.org/cooperation/.

The interested user may also find it useful to become familiar with the Quick Start documentation, which is a short tutorial for beginners providing answers to the most basic 'How to' questions for Annotation Pro. This is also available online from the Annotation Pro website:

http://annotationpro.org/documentation/quick-start/.

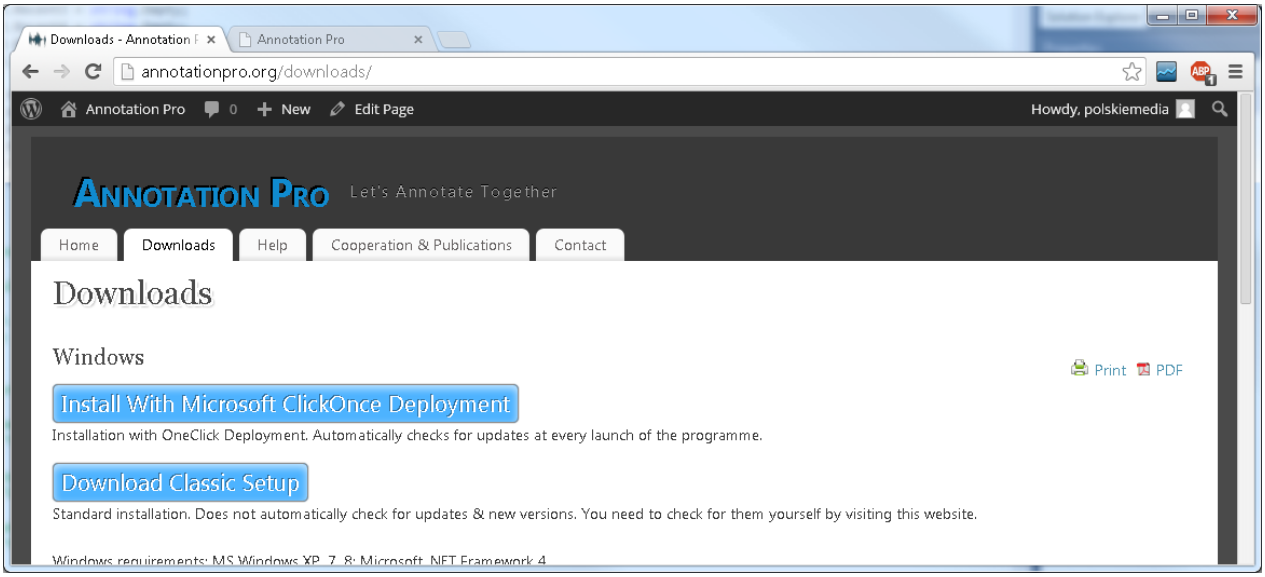
A more elaborate specification of the Annotation Pro plugin environment, and a description of a selection of examples of automatic speech annotation mining using plugins, has been published by Klessa (2016).

Download & Installation

Downloading Annotation Pro

The program can be downloaded from: http://annotationpro.org. Currently, the program runs under Windows operating system, but porting to other platforms is planned in the future. The program can be downloaded in two ways under Windows OS: ClickOnce Deployment and Classic Setup.

For users using other operating systems than Windows who still would like to try Annotation Pro, a possible solution is to use it with a virtual machine (VM).

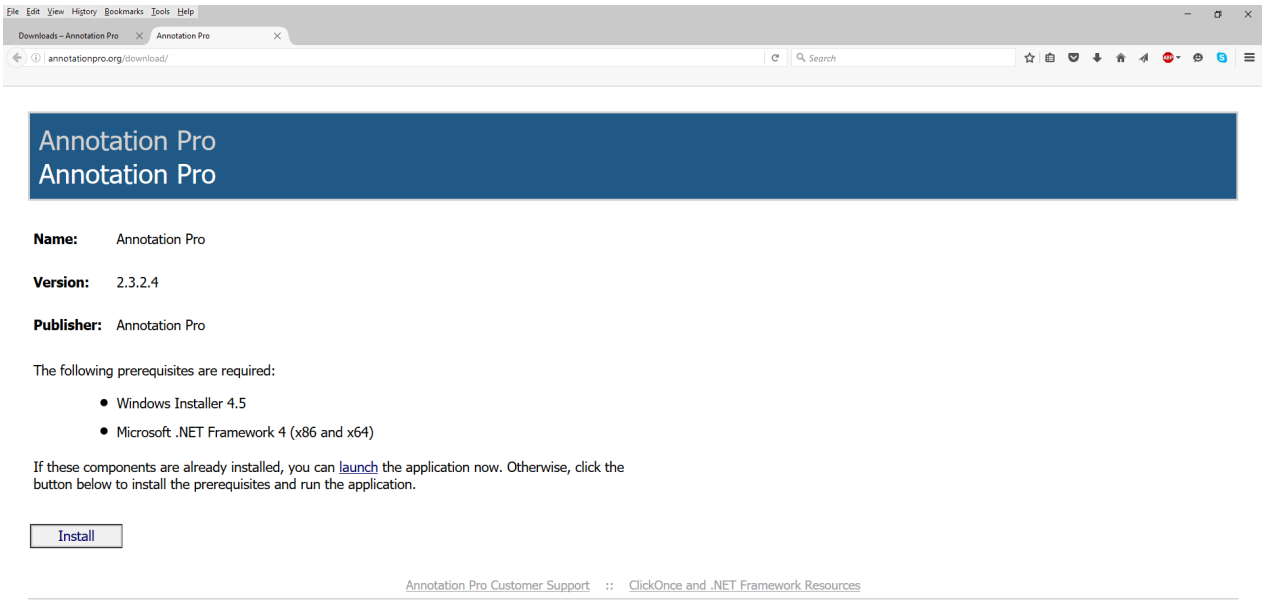


Installation

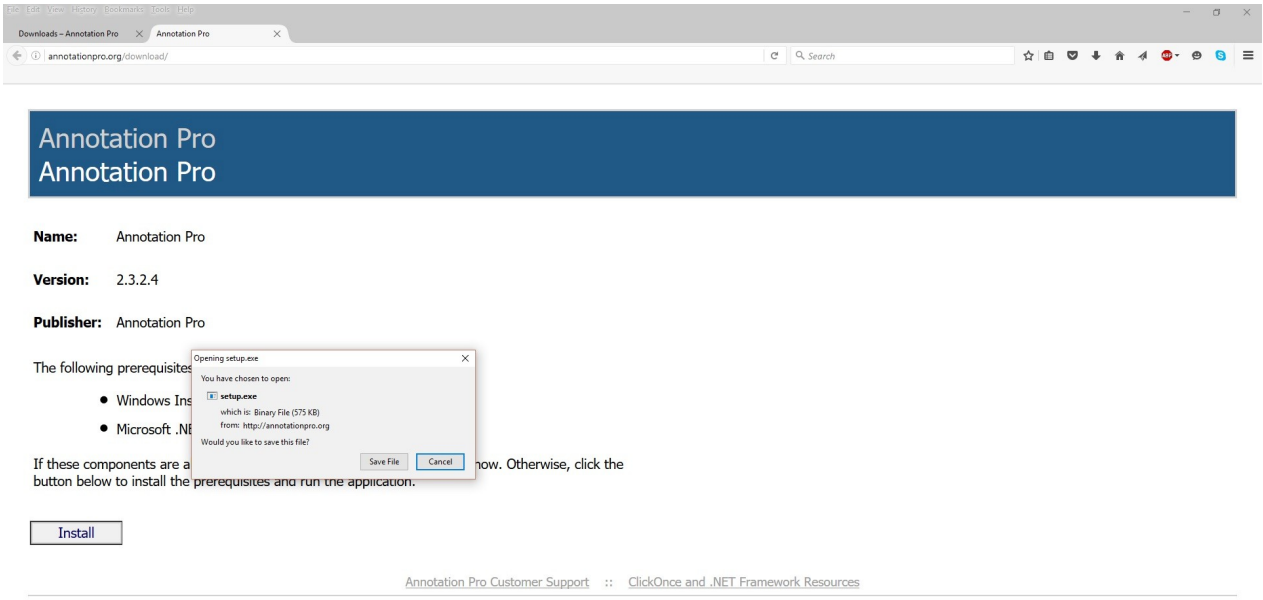
- Click Once Deployment
- Classic Setup

ClickOnce Deployment

ClickOnce is a technology designed by Microsoft for application installation. This technology ensures automatic updates for all workstations. In order to download go to http://annotationpro.org to the section Download, and choose Install with Microsoft ClickOnce Deployment.

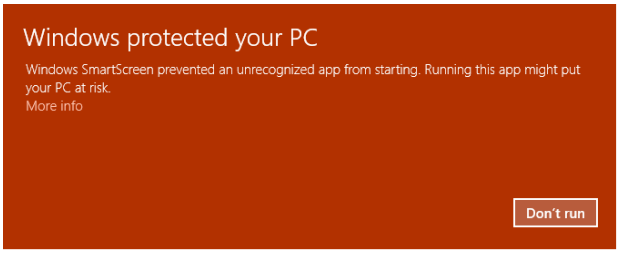


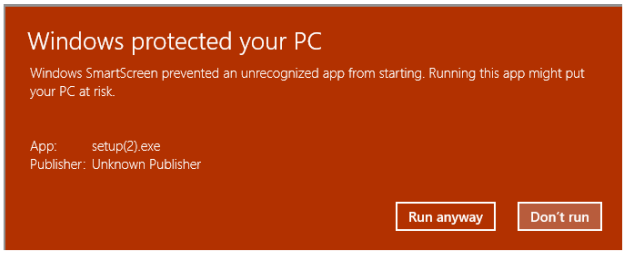
In this case we launch the application directly from the download website. Choose the Install button and download the installer file: setup.exe.



The system will ask whether you are sure you want to run the file. Depending on the version of Windows system, you might expect several types of protection warnings which are due to the fact that Annotation Pro is a freely available, non-commercial piece of

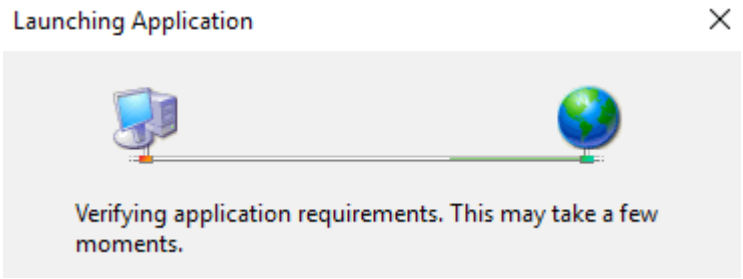
software, and although only legal and authorized tools were used to create it, we are not obliged to pay commercial fees which would remove the 'Unknown Publisher' warnings.



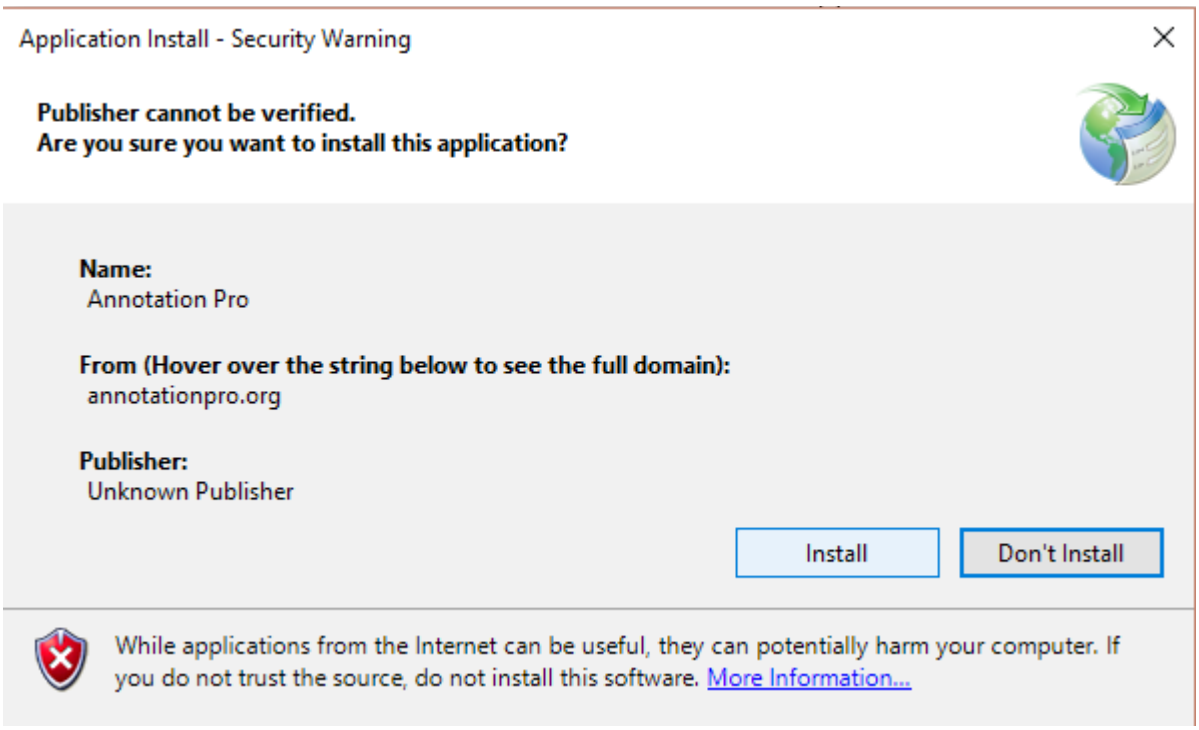


Click 'More info' and then 'Run anyway'.

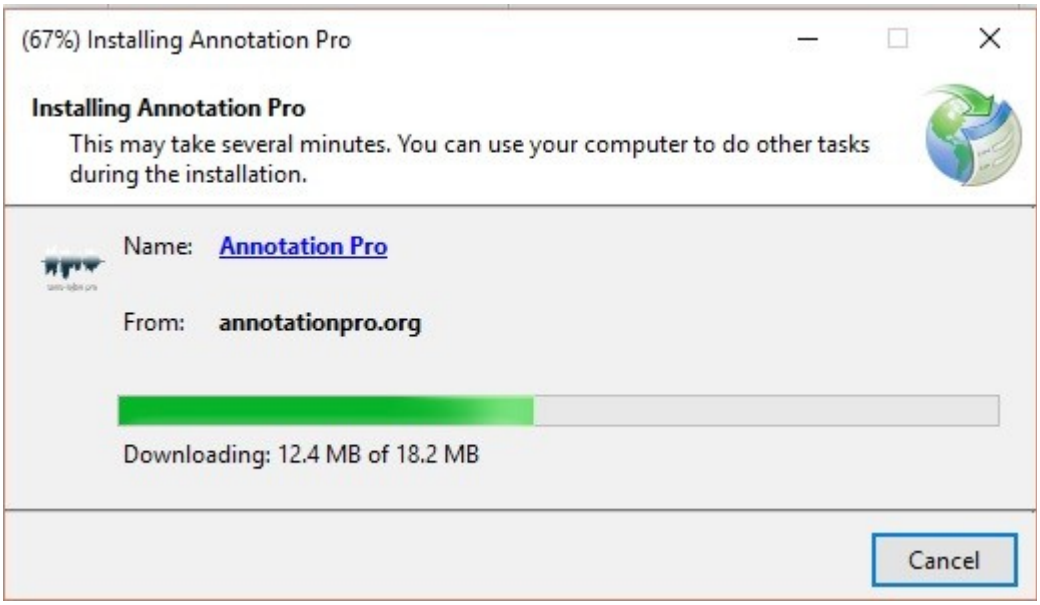
Save the file to disk and launch it. The installer automatically detects whether .NET Framework is available at our computer in the appropriate version. The application will be installed only for the present user profile.



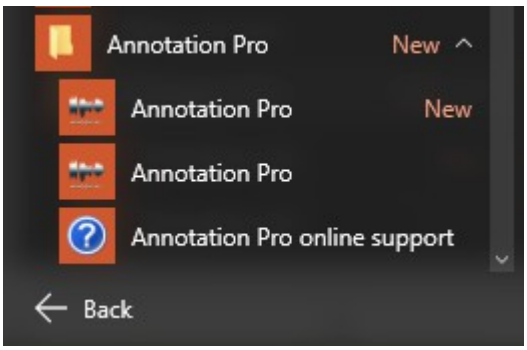
The installer is verifying the application and checking for updates on-line.



The system will ask whether you are sure you want to install Annotation Pro. Click 'Install'.



The latest version of Annotation Pro is downloaded from the Internet and installed. After successful installation the program is launched. In the Menu Start of Windows a new group called Annotation Pro is added, including Annotation pro launch button.

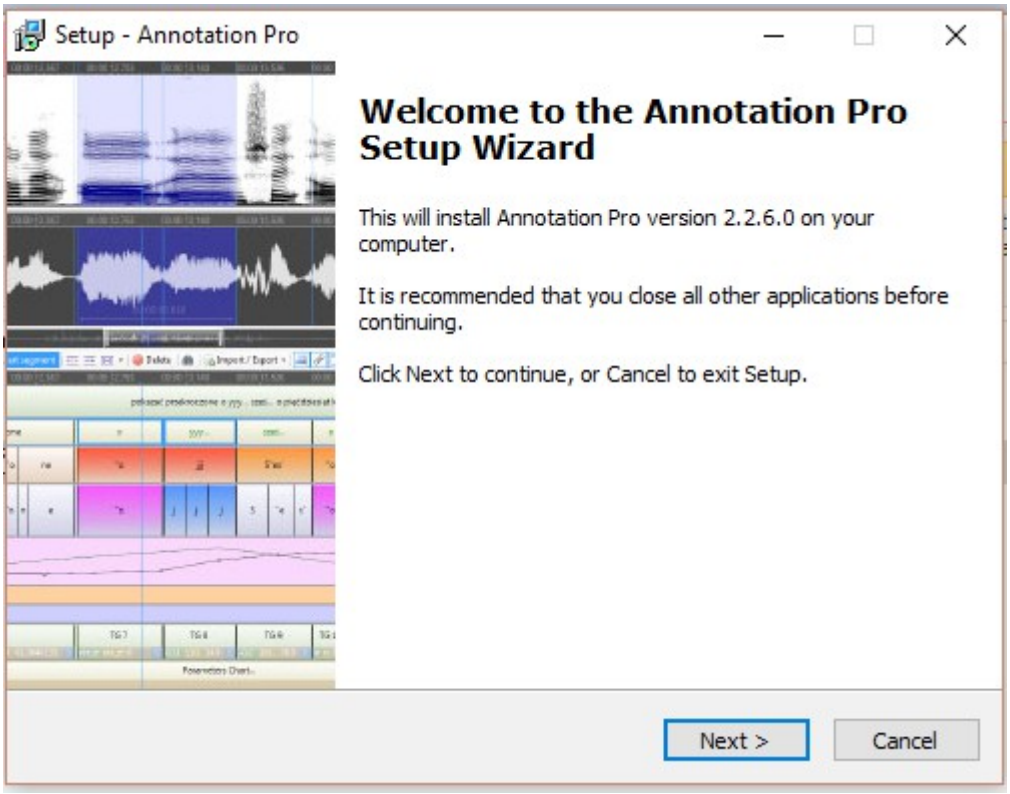


At each launch, the application checks for online updates for Annotation Pro. In case when a newer version is available, a pop-up window is displayed asking whether the user wants to install the new version.

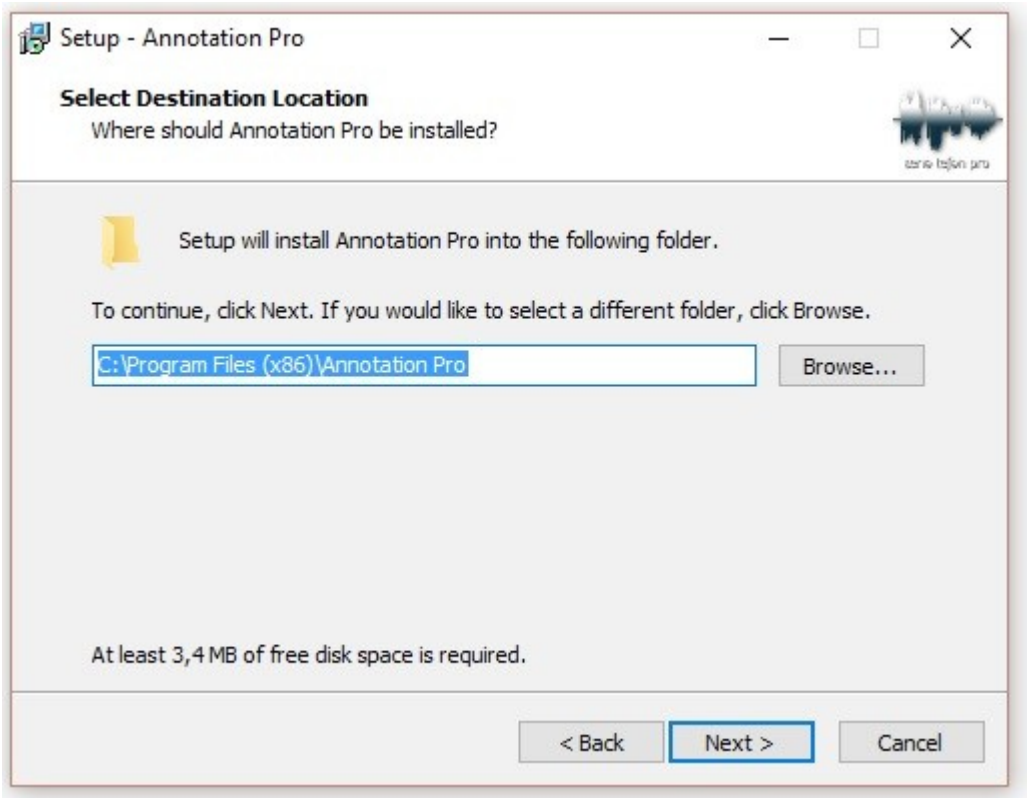
IMPORTANT NOTICE! It is always advisable to install the newest version of the program. If we click Skip (and thus refuse to download and install the update), the program will not ask again about installing this version. In order to install the new version in such case, you should uninstall the application using 'Uninstall or change a program' (Settings, Apps & features) and install once again.

Classic Setup

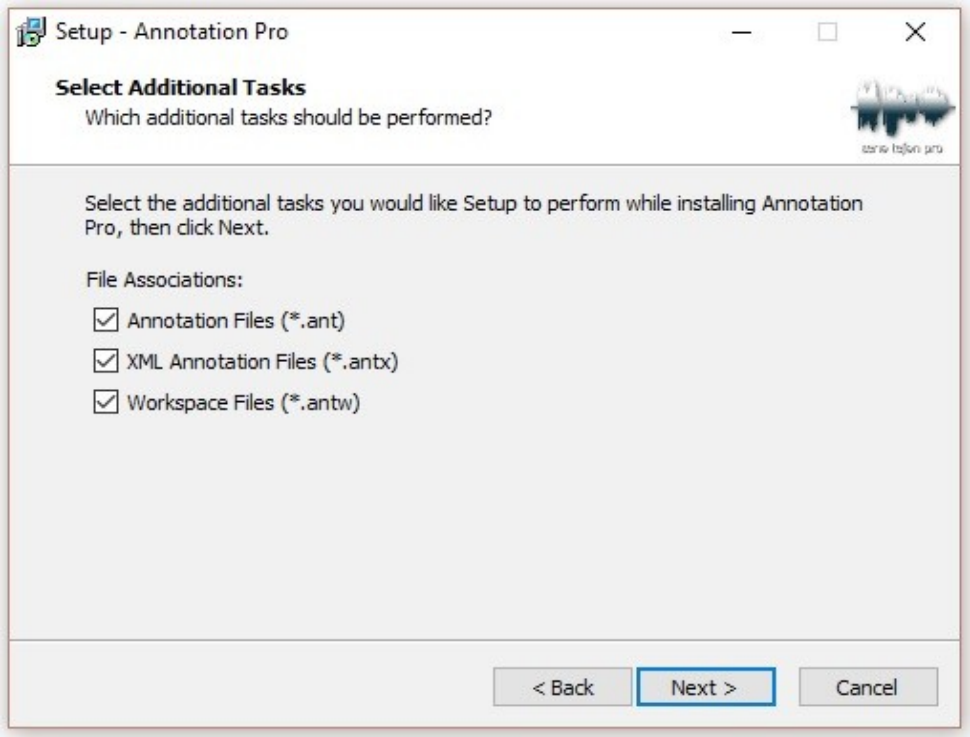
Classic Setup is a standard installer that installs the program in a folder selected by the user and creates a group with the program's shortcuts in Menu Start. Go to http://annotationpro.org to the Downloads section and select Download Classic Setup. Save the file annotationpro.setup.exe to your disk and run it. Then click Next.



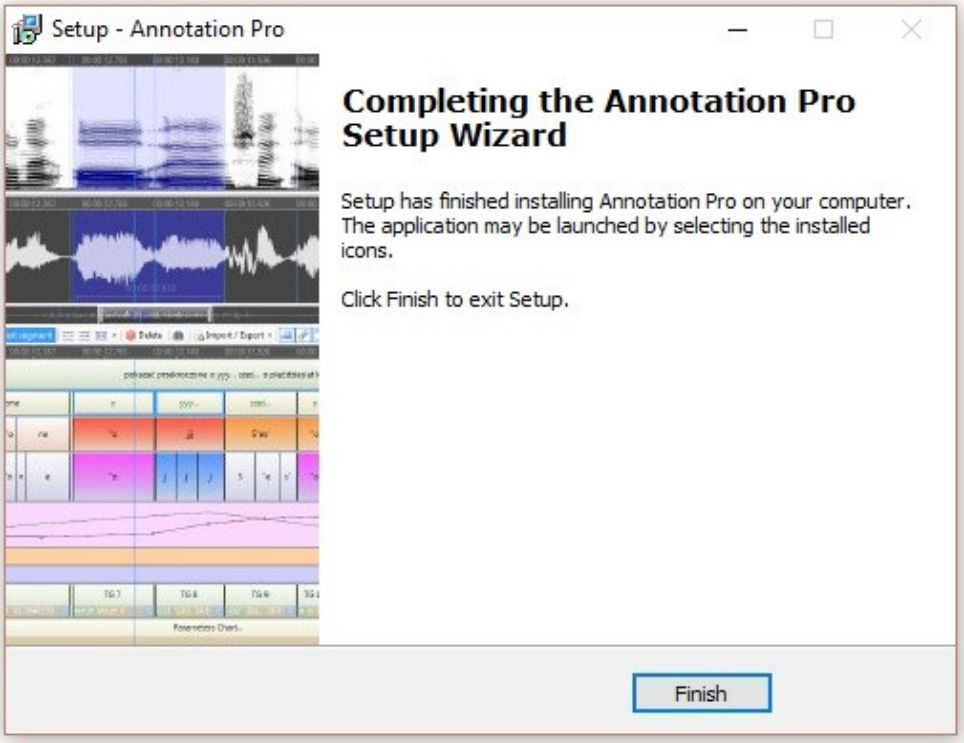
Choose folder to install the program. It is recommended to use the default folder. Click Next.



Choose the file associations for Annotation Pro. It is recommended to select all. Then click Next.

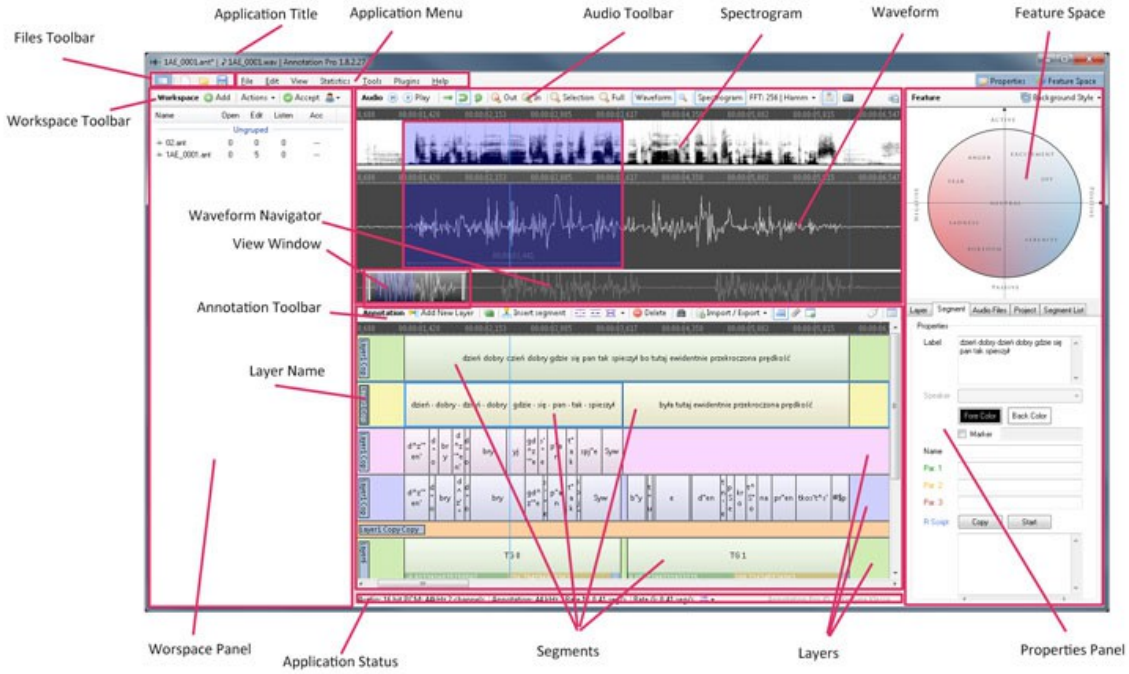


When the installation progress is complete, click Finish.



The program can now be launched from Start Menu / Annotation Pro.

Main Window


Application Title
Application Menu
Audio Toolbar
Spectrogram
Waveform
Feature Space
Files Toolbar
Workspace Toolbar
Waveform Navigator
View Window
Annotation Toolbar
Layer Name
Worspace Panel
Application Status
Segments
Layers
Properties Panel

Application Settings

After installation it is recommended to inspect the program's settings in order to adjust them to the user's needs when needed. Settings are available in the Application Menu / Tools.

Most popular settings:

Auto Add To Workspace

Any annotation files open in the program are automatically added to workspace collection.

Follow Cursor

Waveform view follows cursor when the sound is played.

Auto Rewind

When the audio playing is stopped the cursor returns to the initial position.

Loop Audio

Loop audio. After playing audio ends, replay again from the beginning.

Magnify

Magnify waveform display. A useful option in case of recordings of poor quality, weak signal.

Boundaries

Show segment boundaries at the Audio Panel. Useful for manual segmentation or boundary placement adjustments.

Black & White

Display Audio Panel in black & white. A good solution for print-screens, e.g. for the needs of paper publications.

Snap To Segments

Automatically snap segments when editing boundary positions. Useful for manual correction of segmentation.

Stick To Neighbors

Stick boundaries of neighboring segments. After sticking, the boundaries of neighboring segments move together, as if they were one common boundary (like a marker).

Auto Selection

After single clicking on a segment, it becomes automatically highlighted in the Audio Panel. An extremely useful feature enabling you e.g. to quickly click and play particular segments.

Auto Edit Mode

Auto edit mode. A fast edit mode recommended for advanced users only. Enables inserting segment boundaries into a layer in the course of audio playing.

Options

Additional options. For example, you can set the default decimal separator here which may be important when you import/export data from/to spreadsheets. You can also adjust the file compression level or program's appearance, e.g. font size as displayed in annotation layers.

Application Toolbar

Left side

The crucial buttons for file operations: Workspace, New, Open, Save. The commands: New, Open and Save are also available in Application Menu / File.

Workspace

Open Workspace Panel, enabling grouping annotation files (ANT) and saving information about the collections in Workspace files (ANTW).

> NOTE: An ANTW file includes information about annotation files included in a file collection. This way, collections of ANT files located in one or more folders on disk can by opened with just one click. Thus, by definition, the ANTW file itself does not contain any annotations which are always saved in ANT (or its simpler counterpart: ANTx).

New

Start new annotation. More

Open

Open audio file, annotation file or a workspace. More

Save

Save changes. More

Right side

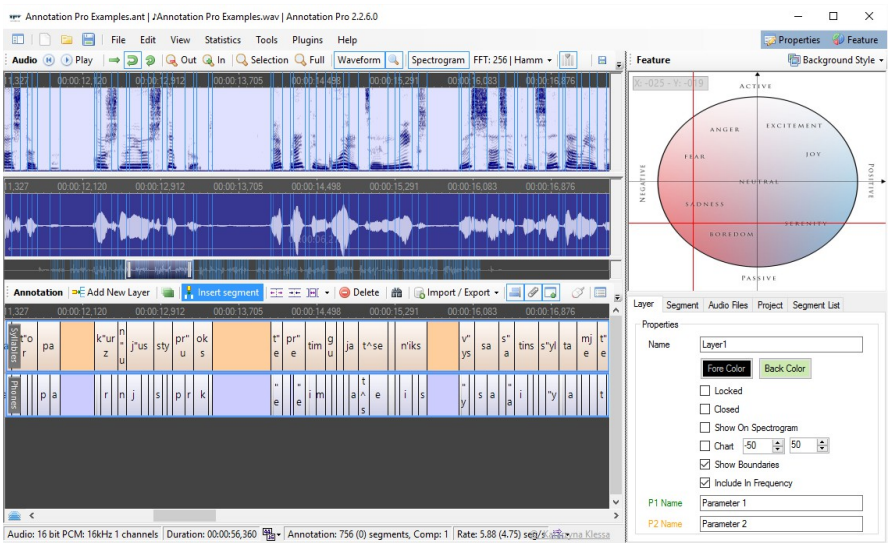
The second part of this bar is on the right side and it enables showing / hiding Properties Panel and the Feature Space.

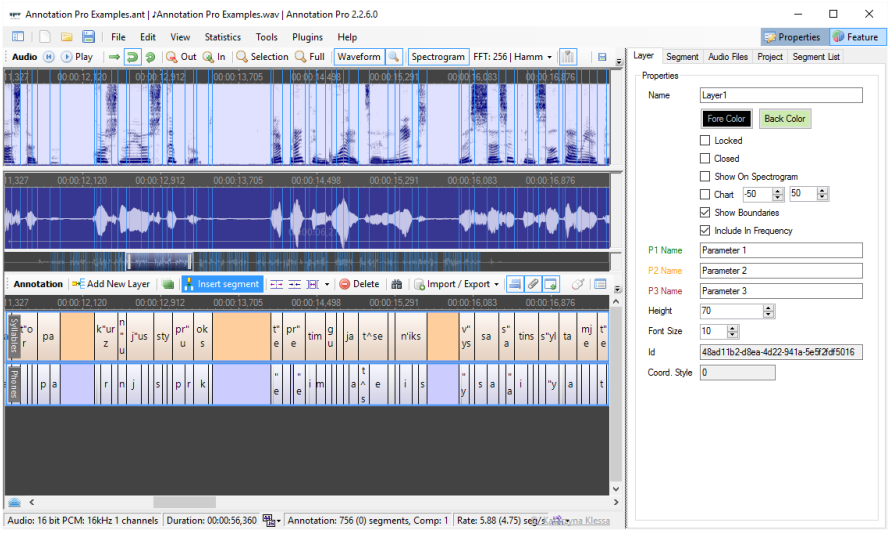
Properties

Show / hide Properties Panel

Feature Space

Show / hide Feature Space. The Properties Panel must be shown in order to show the Feature Space. The feature space may be visible (top picture) or hidden (bottom picture) by clicking on the Feature button (top right corner).



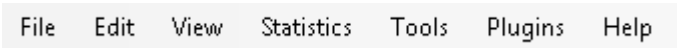


More about Workspace Panel

More about Properties Panel

[More about Feature Space]

Application Menu



Application Menu includes all commands available in the program. It also includes keyboard shortcuts related to the commands.

- File - open and save file commands.
- Edit - all edit commands available in the program.
- View - show / hide option for the program's panels, as well as zoom commands.
- Statistics - statistics commands for annotation mining and plotting with R.
- Tools - application settings and options for audio and annotation panels.
- Plugins - launching user's plugins and access to plugin folder
- Help - help and credits.

File

File Menu includes commands for opening and saving files.

- New
- Open
- Save
- Save As
- Workspace
    - New
    - Open
    - Save
    - Save As
    - Add Files
    - Remove Files
    - Reset Statistics

- Recent Files
- Exit

New

Create a new empty annotation, one annotation layer.

Open

Open files from disk. The command opens audio files (*.wav), annotations (*.ant or *.antx) and workspace files (*.antw).

Save

Save changes to a file. If changes are saved for the first time, the program will ask for a file name. If changes included workspace modifications, the program will also save changes to workspace.

Save As

Save current file under a new name.

Workspace

File / Workspace includes commands for file operations available with Workspace.

- New
- Open
- Save
- Save As
- Add Files
- Remove Files
- Reset Statistics

Workspace / New

Create a new empty workspace.

Workspace / Open

Open an existing workspace from file.

Workspace / Save

Save workspace to file. If the workspace has not been saved before, the program will ask for a name.

Workspace / Save As

Save current workspace under a new name.

Workspace / Add Files

Add files selected from a folder to current workspace.

Workspace / Remove Files

Remove selected files from workspace.

Workspace / Reset Statistics

Reset workspace statistics. The columns Open, Edit, Listen become reset to zero.

Recent Files

Show recently used files.

Exit

Shut down the application.

Edit: editing annotation and audio files

The Edit menu includes all edit commands.

- Undo
- Redo
- Play / Stop
- Cut
- Copy
- Paste
- Audio
  - Select Audio From Segment
  - Clear Audio Selection
- Layer
  - Add New Layer
  - Duplicate Layer
- Segment
  - Insert Segment
  - Split Segment
  - Consolidate Segment
  - Auto Resize Segment
  - Resize To Audio Selection
  - Space Segments Equally
  - Clear Parameters
  - Fill Pauses
  - Consolidate
  - Group
  - Ungroup
  - Auto Group
  - Clear Segment Selection
  - Select All
- Auto Segmentation
- Go To

  - Start
  - End
  - Prev Segment
  - Next Segment
  - Prev Segment & Selection
  - Next Segment & Selection
- Find & Replace
- Delete

Undo

Undo changes made by the previous operation. The program can undo changes made until the last Save operation. Saving a file clears the Undo memory.

Redo

Redo a previously undone operation (on condition that the annotation was not saved in the meantime).

Play / Stop

Play and stop audio sound.

Cut

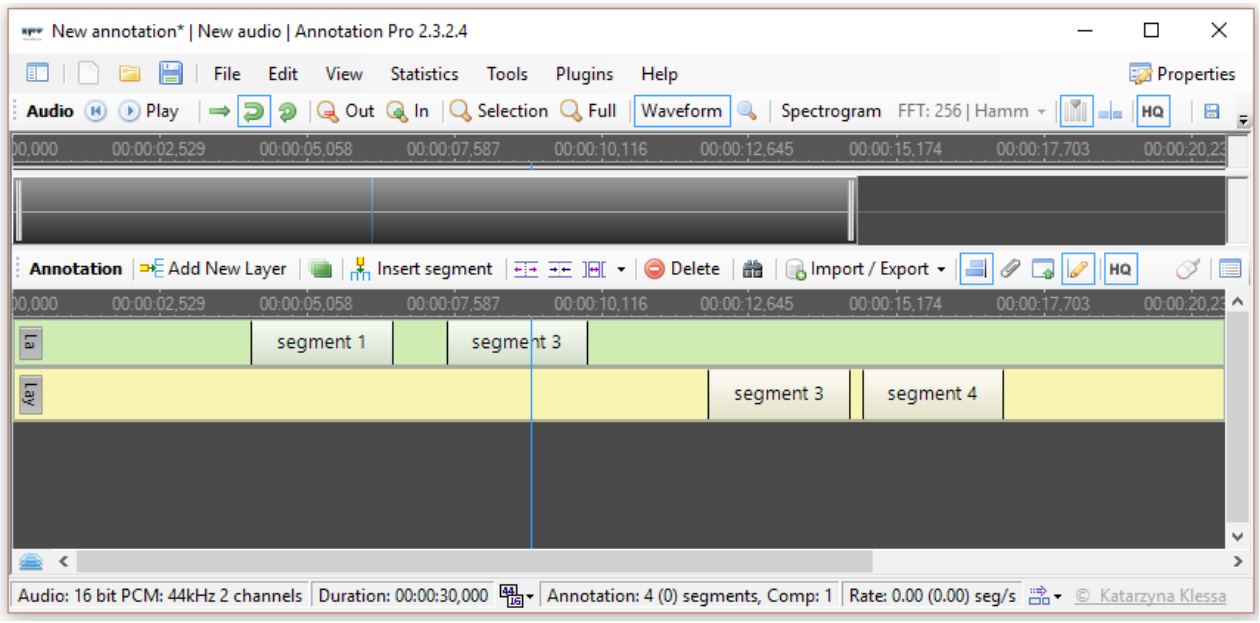
Cut selected segments to Windows clipboard. It is possible to select segments from several layers.

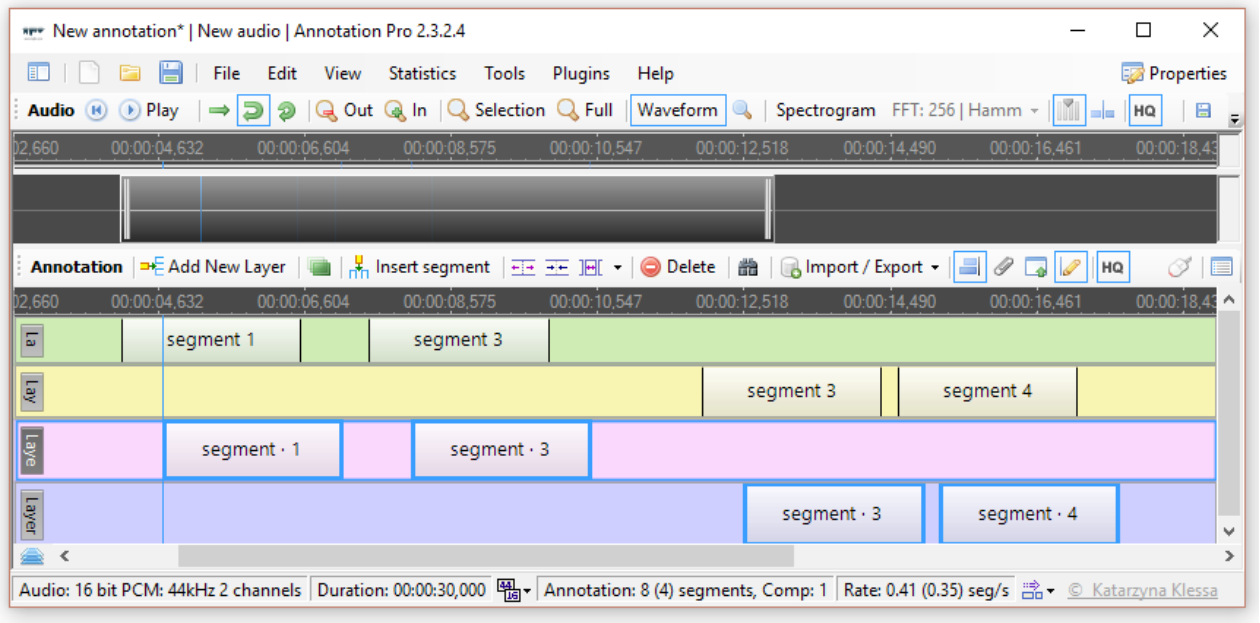
Copy

Copy selected segments to Windows clipboard. It is possible to select segments from several layers.

Paste

Paste the previously selected segments from clipboard. The segments are pasted at cursor and highlighted. If there is not enough space for pasting, the operation will not be completed, and the program will display a notification dialog. Segments from multiple layers can be pasted. The segments from the topmost layer will be pasted into the currently highlighted layer, and the remaining ones will be pasted into lower layer(s) keeping their relative positions within the layers. In case if there are not enough layers, new layers will be created.





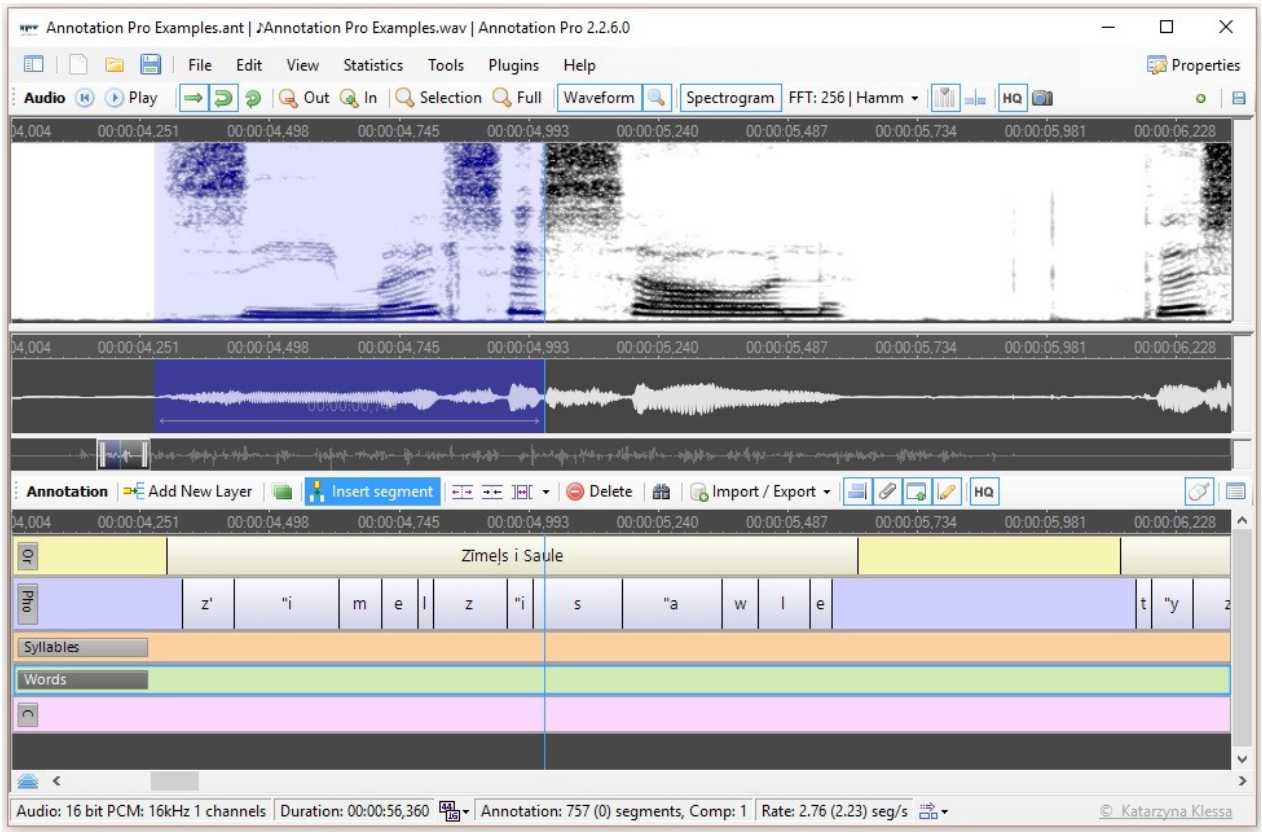
Audio

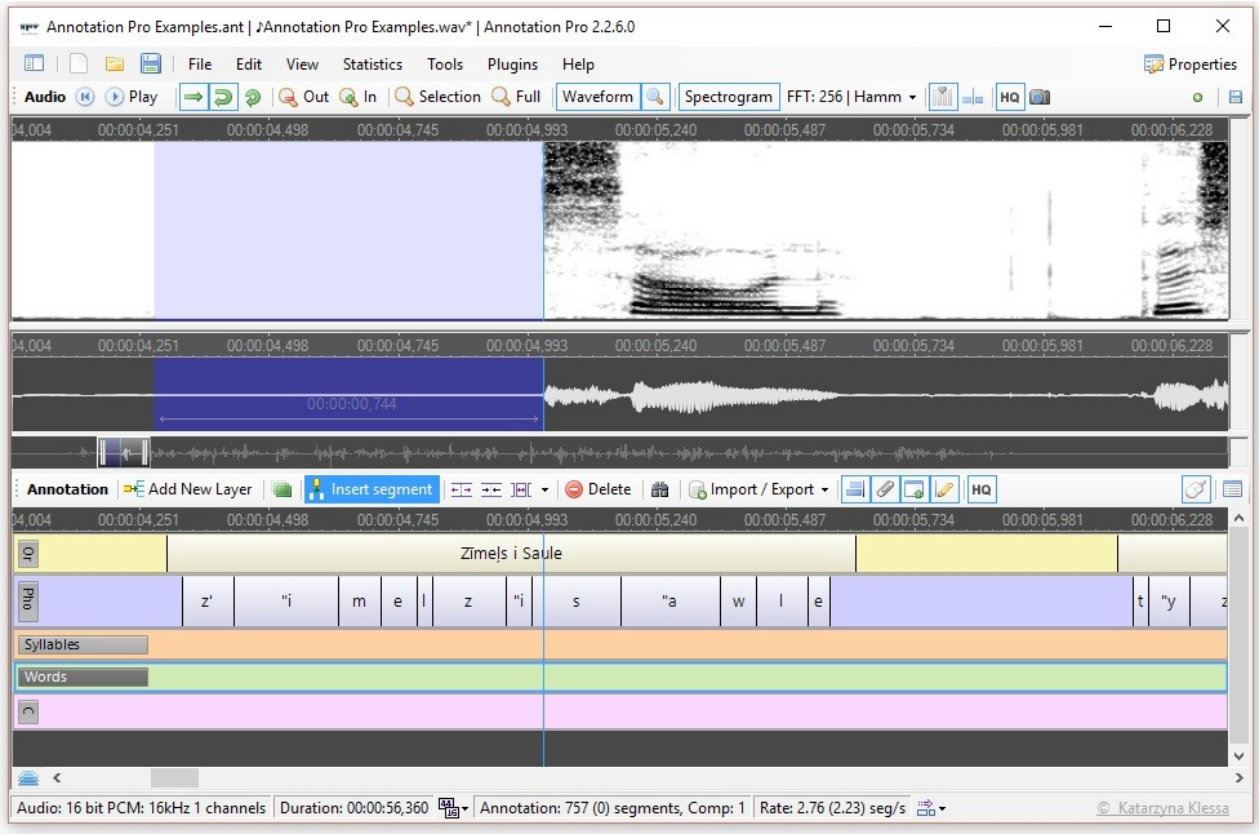
Audio edit and navigation commands.

- Select Audio From Segment
- Clear Audio Selection

Change Audio selection to silence

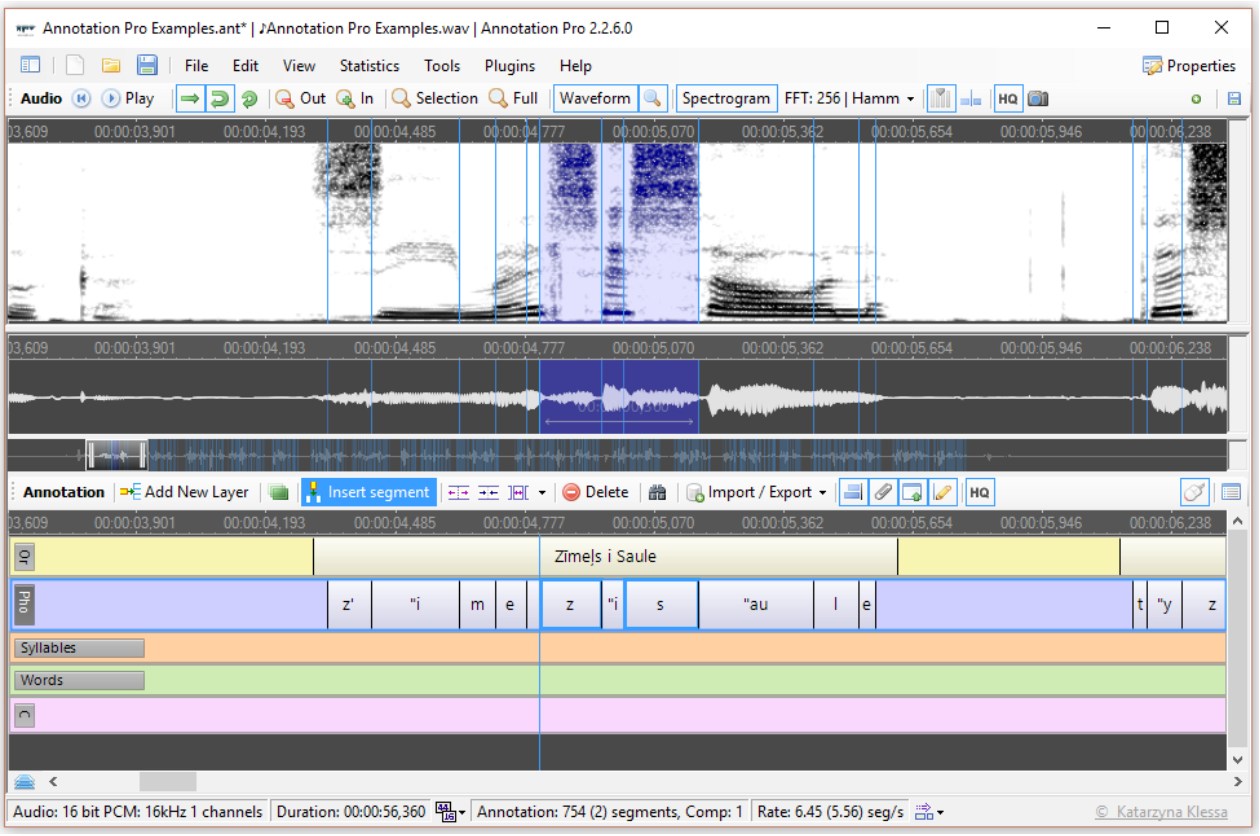
Change the selected (highlighted) fragment of the audio file to silence.

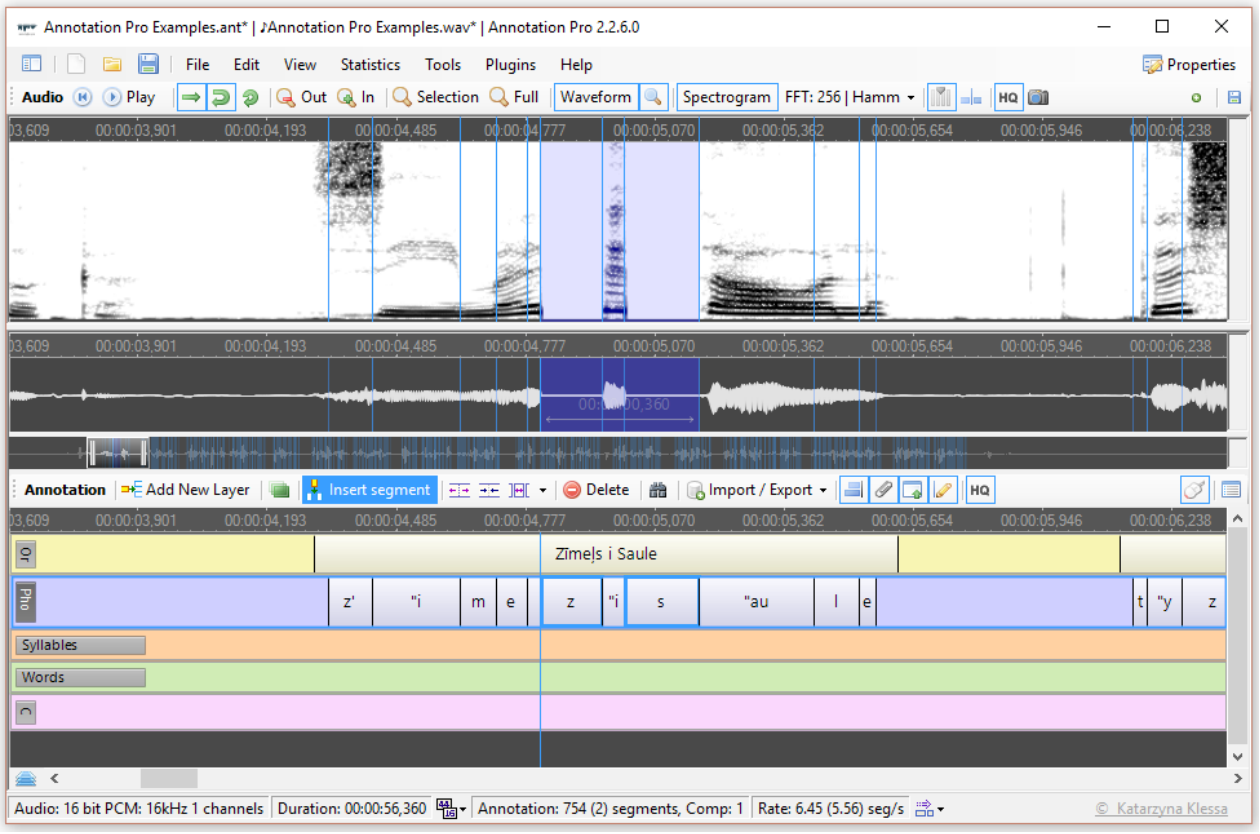




Change to silence using selected segments

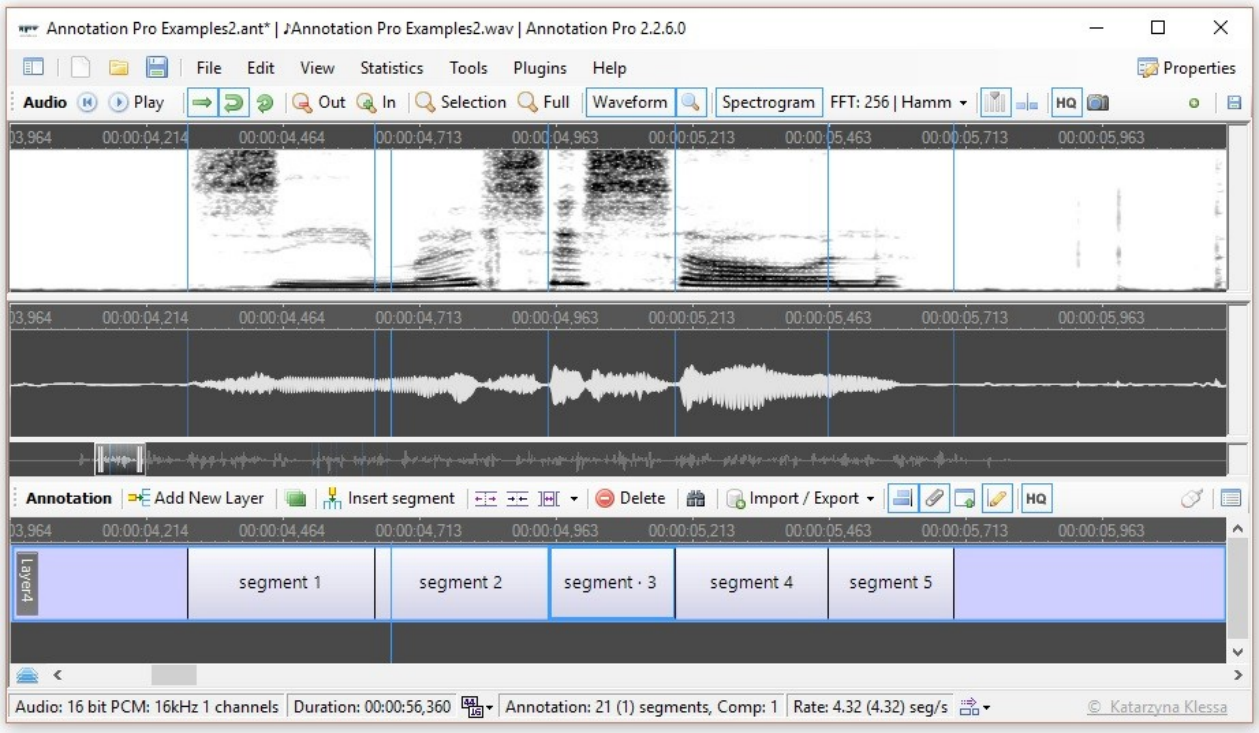
Change the audio to silence using selected segments. Here in the example, the sound corresponding to /z/ and /s/ segments was replaced with silence.

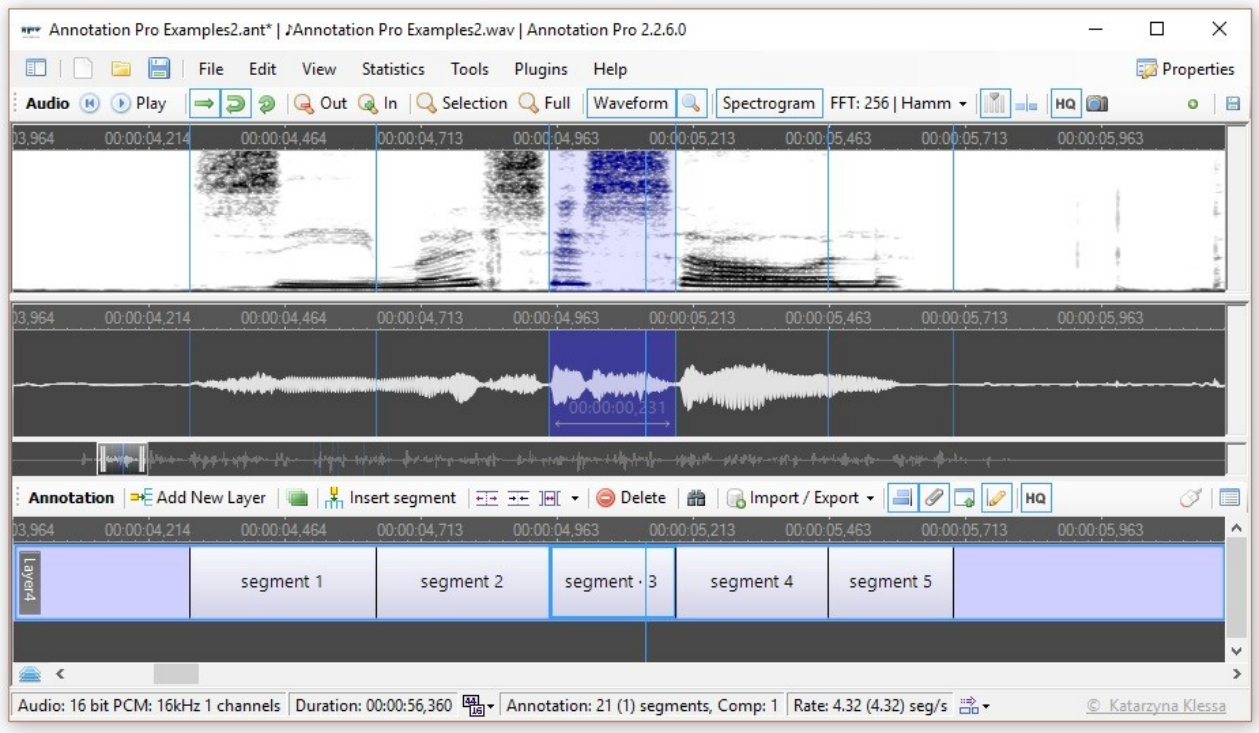




Select Audio From Segment

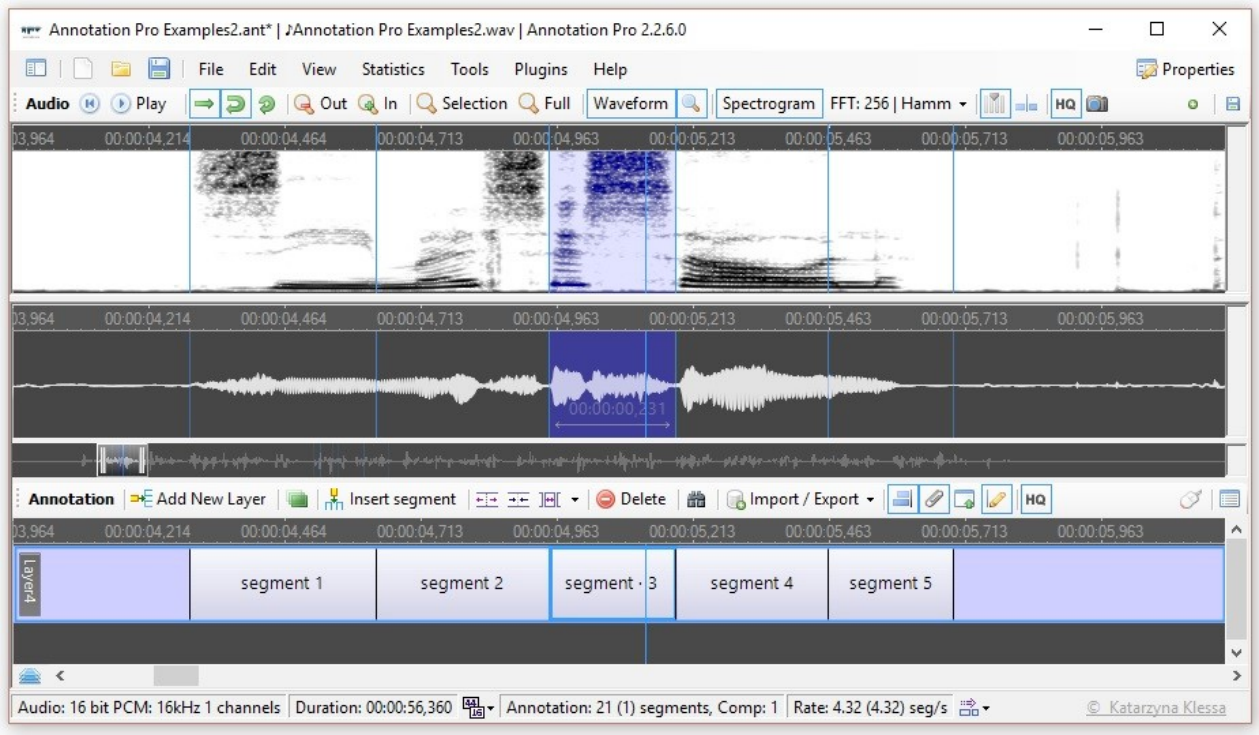
Select and highlight audio for selected segment. More than one segment can be selected at a time.

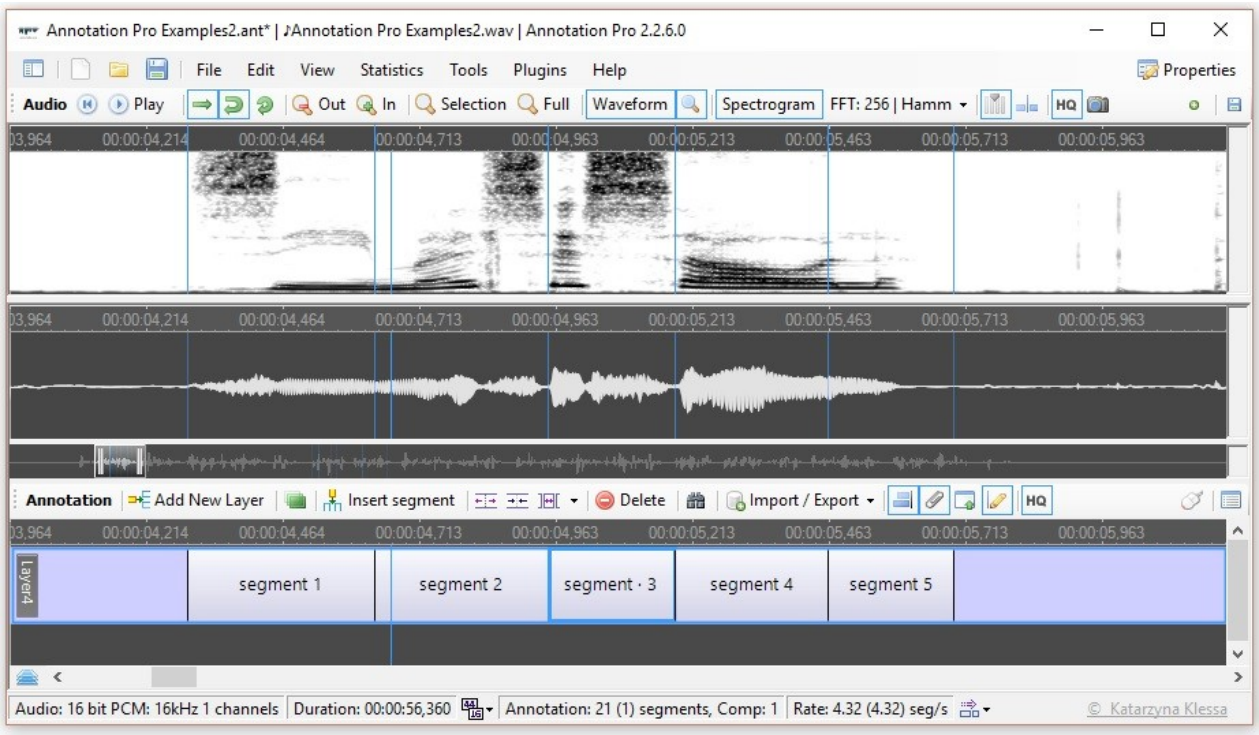




Clear Audio Selection

Clears audio selection.





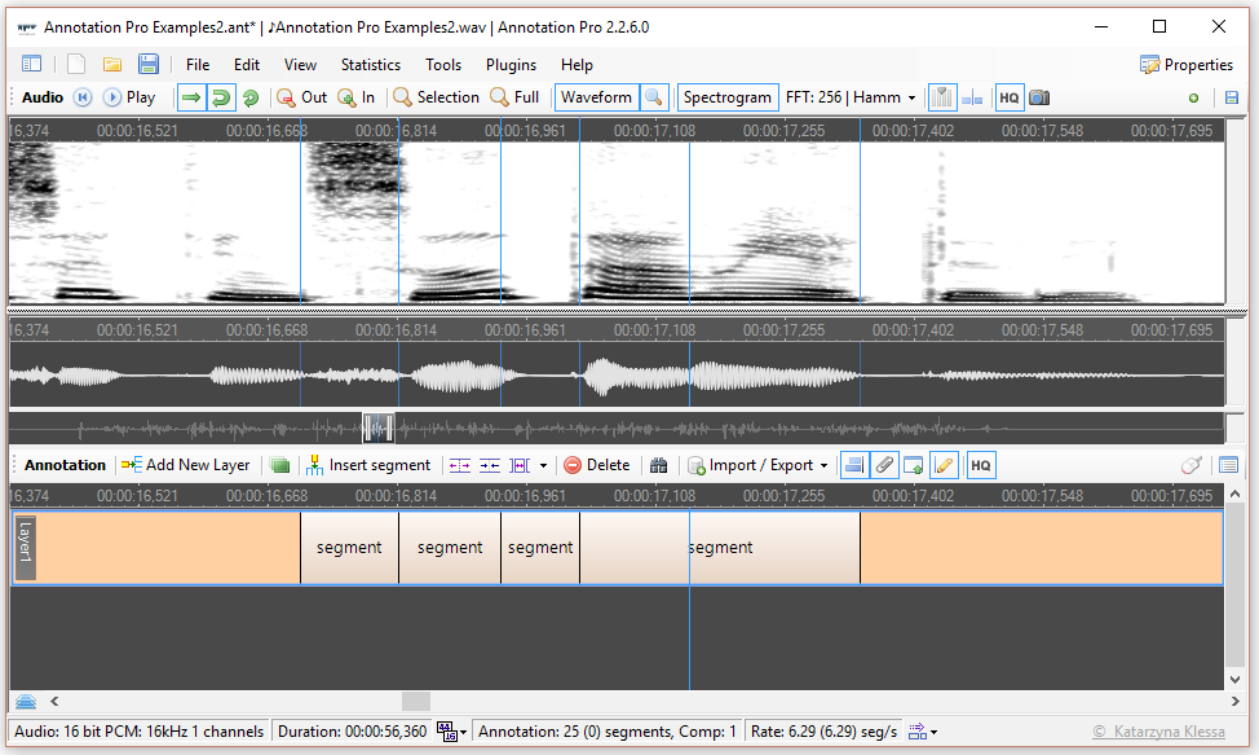
Layer

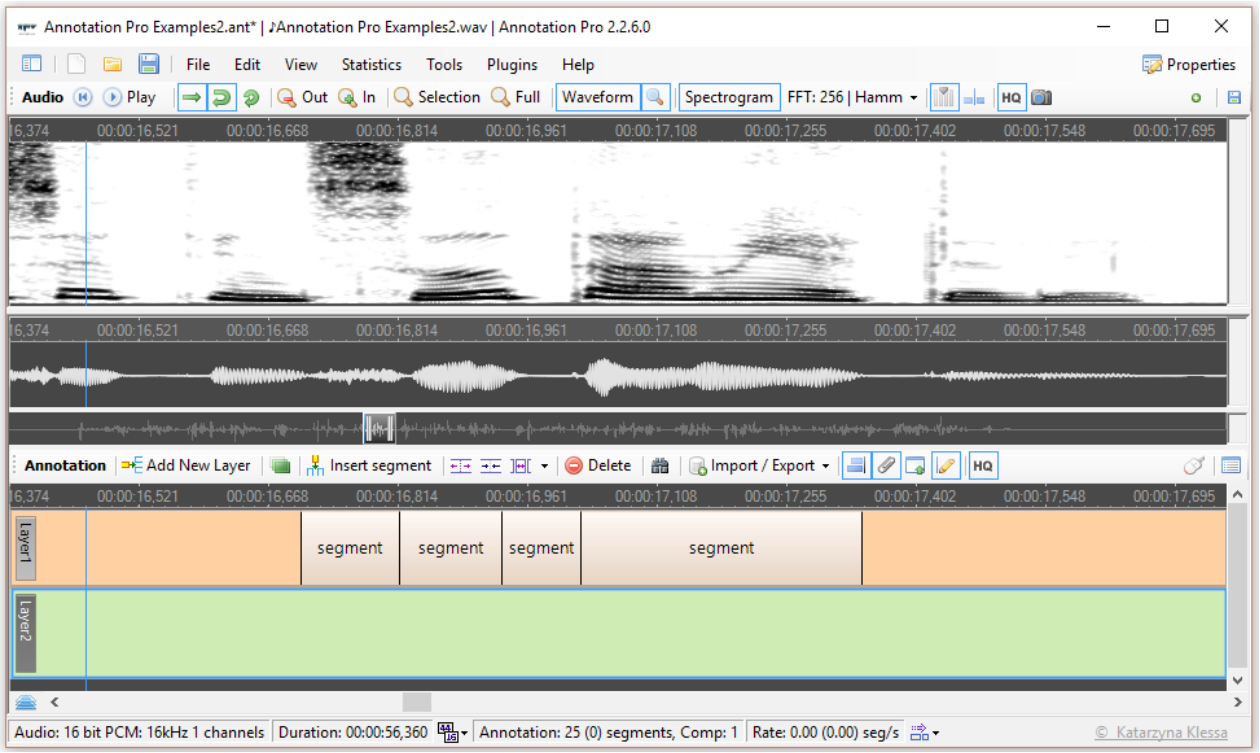
Includes the editing commands related to layer.

- Add New Layer
- Duplicate Layer

Add New Layer

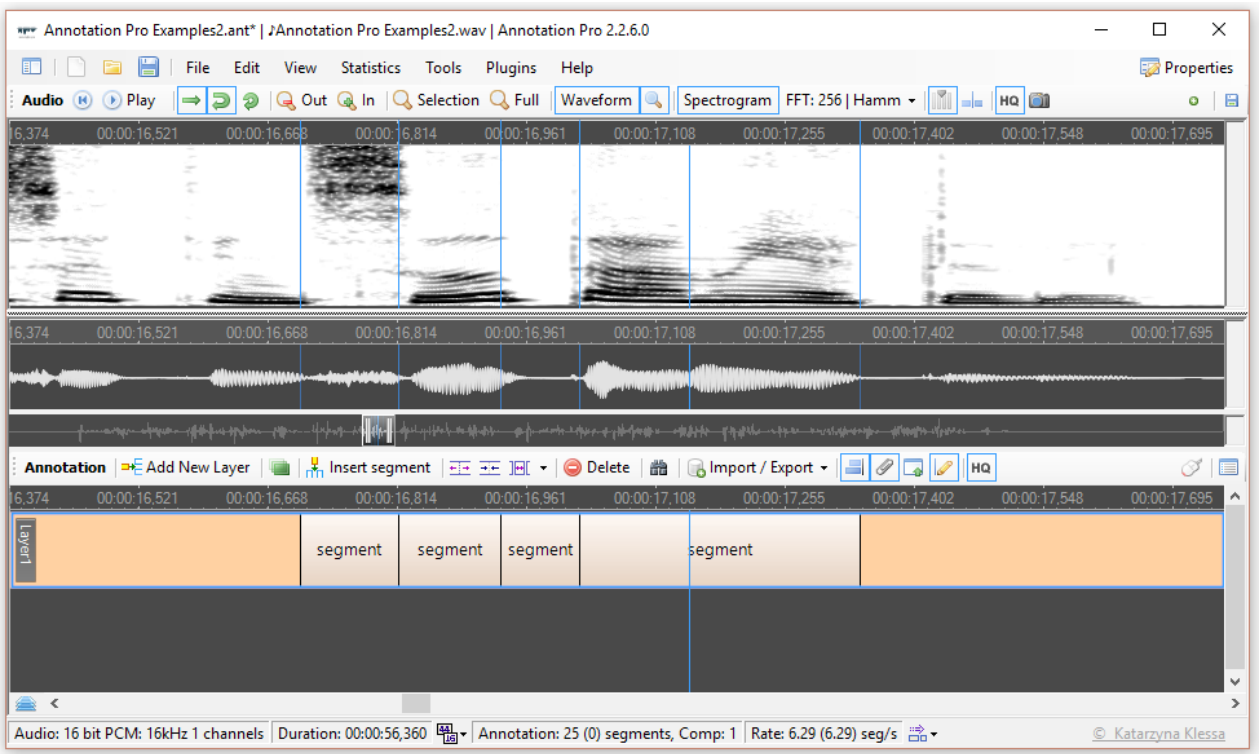
Add new empty layer, and select it.

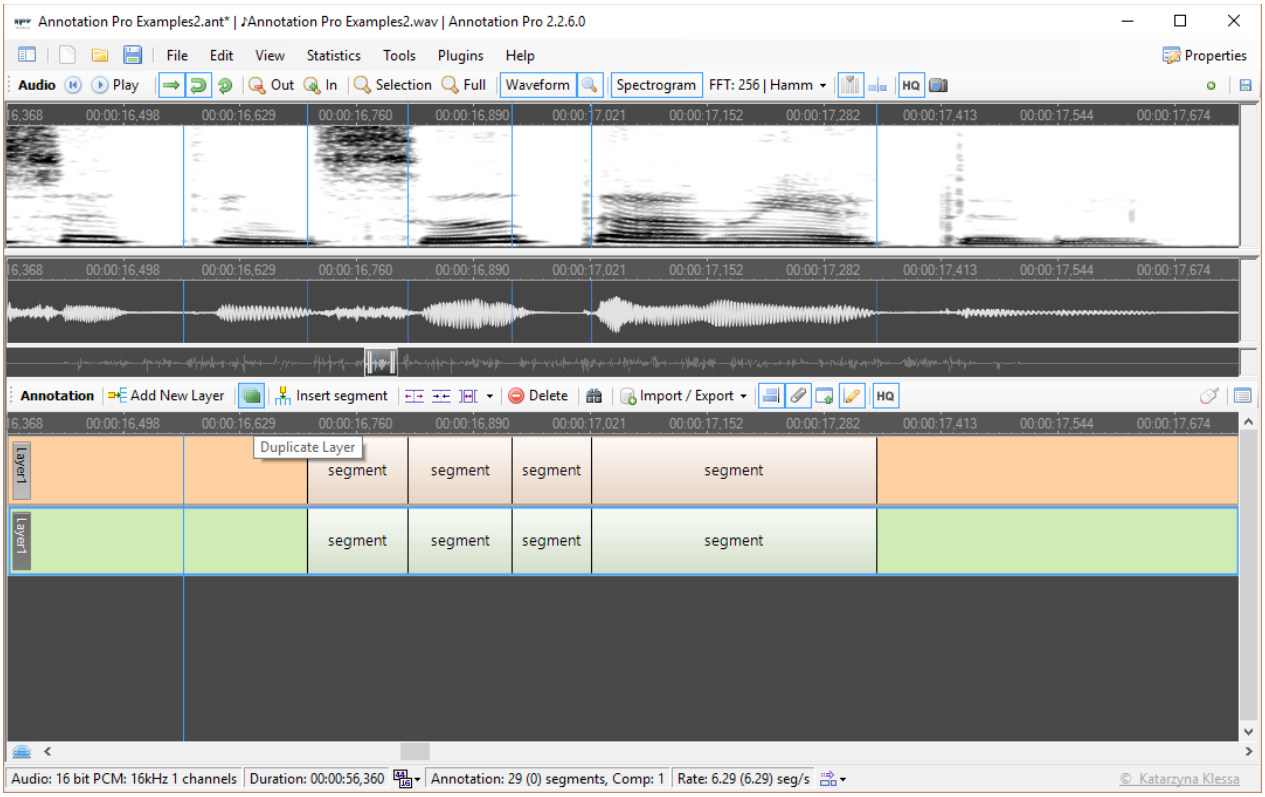




Duplicate Layer

Duplicate selected layer with all its segments and selects the new layer.





Segment

Editing commands for a segment (representing a phone, syllable, word, phrase or any other segmentation level).

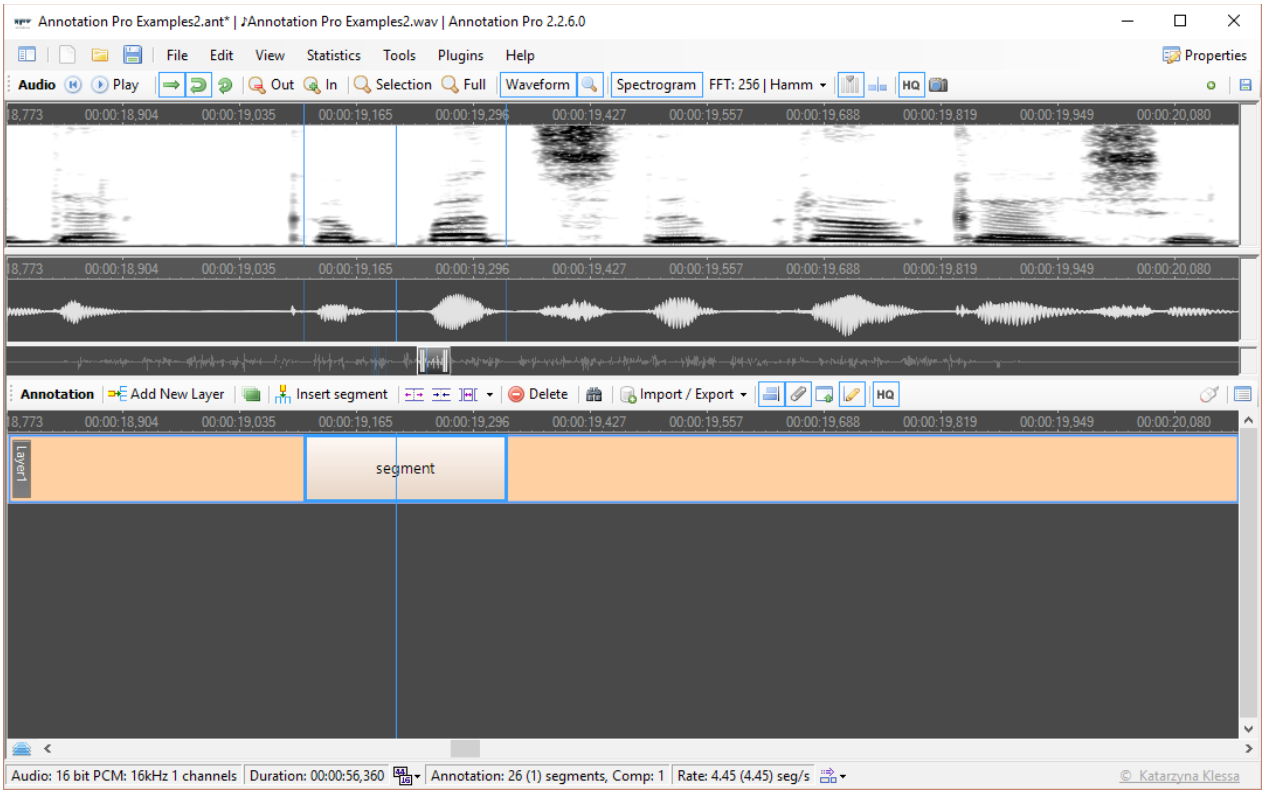
- Insert Segment
- Split Segment
- Consolidate Segment
- Auto Resize Segment
- Resize To Audio Selection
- Space Segments Equally
- Clear Parameters
- Fill Pauses
- Consolidate
- Group
- Ungroup
- Auto Group
- Clear Segment Selection
- Select All

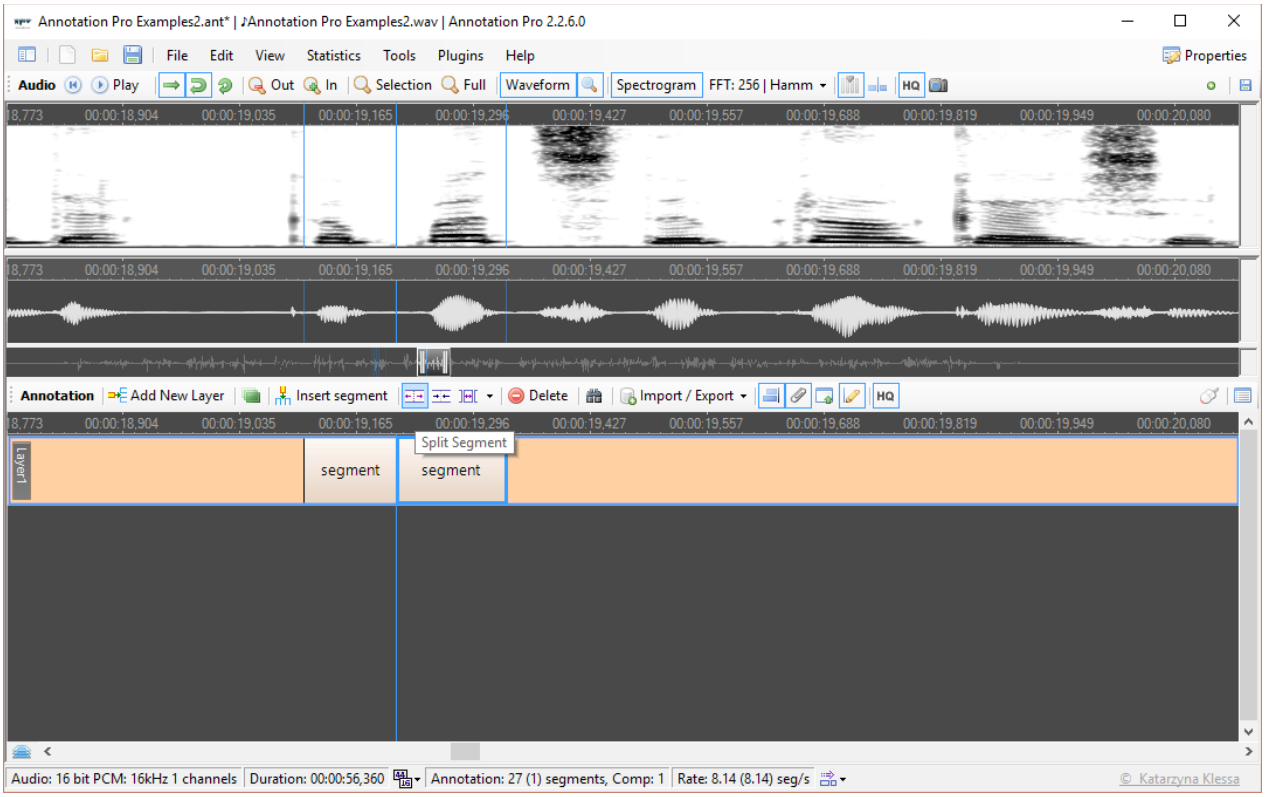
Insert Segment

Insert a segment into the selected layer. If a fragment of audio is selected, the new segment is inserted corresponding to the region of audio selection.

Split Segment

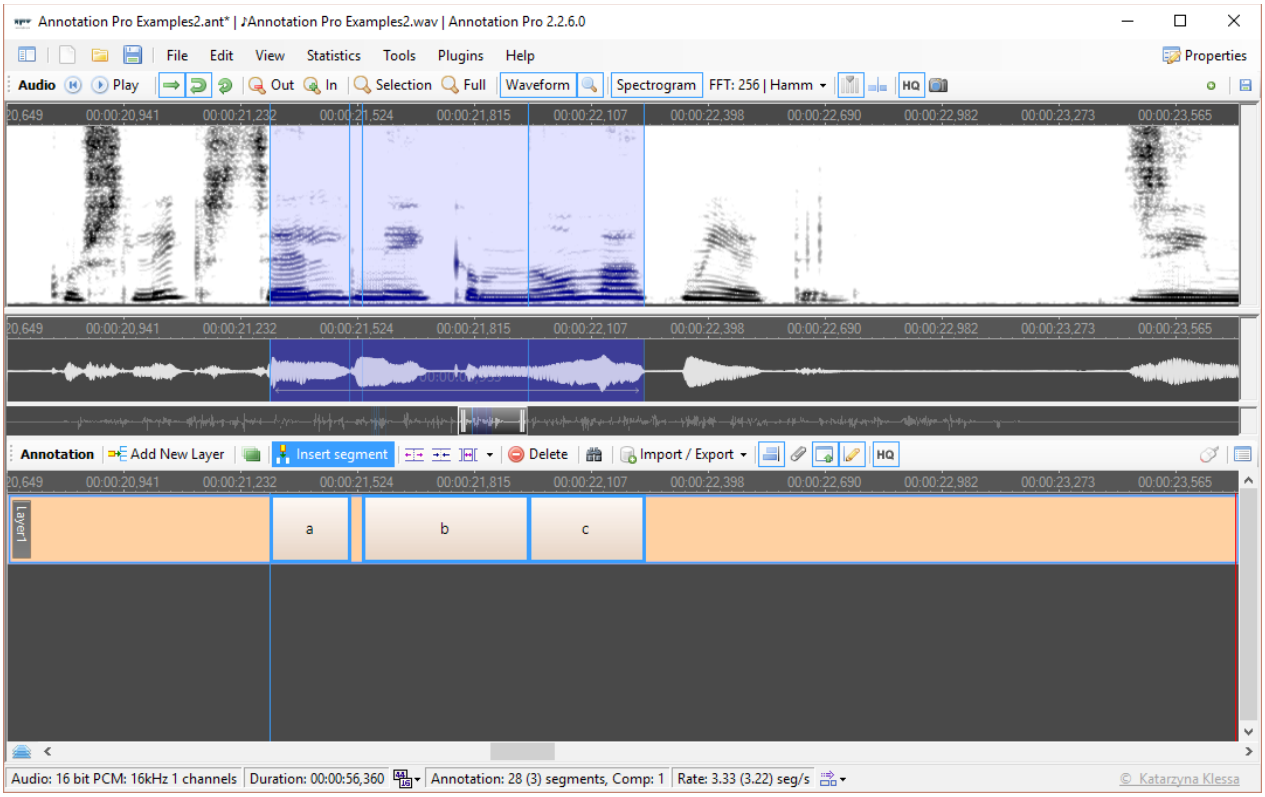
Split segment into two parts at the cursor position and select the segment to the right from the cursor position.

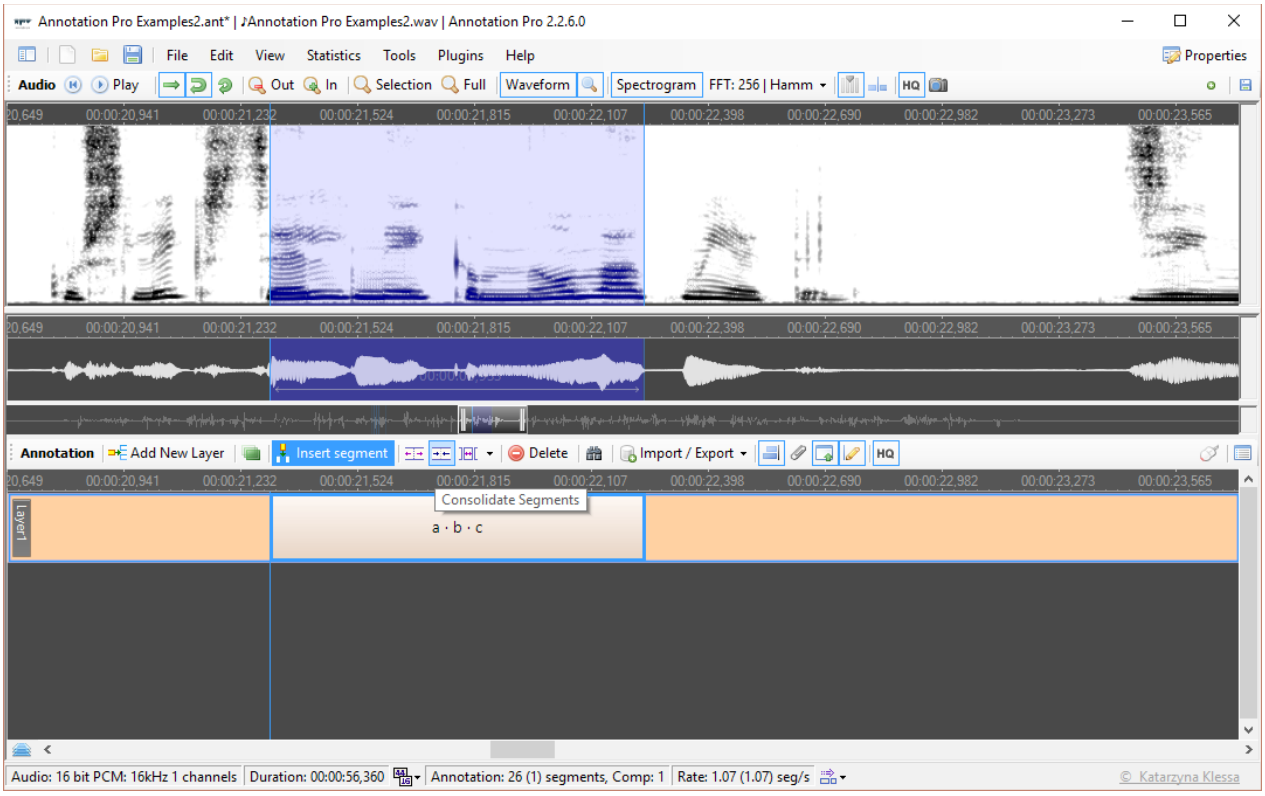




Consolidate Segment

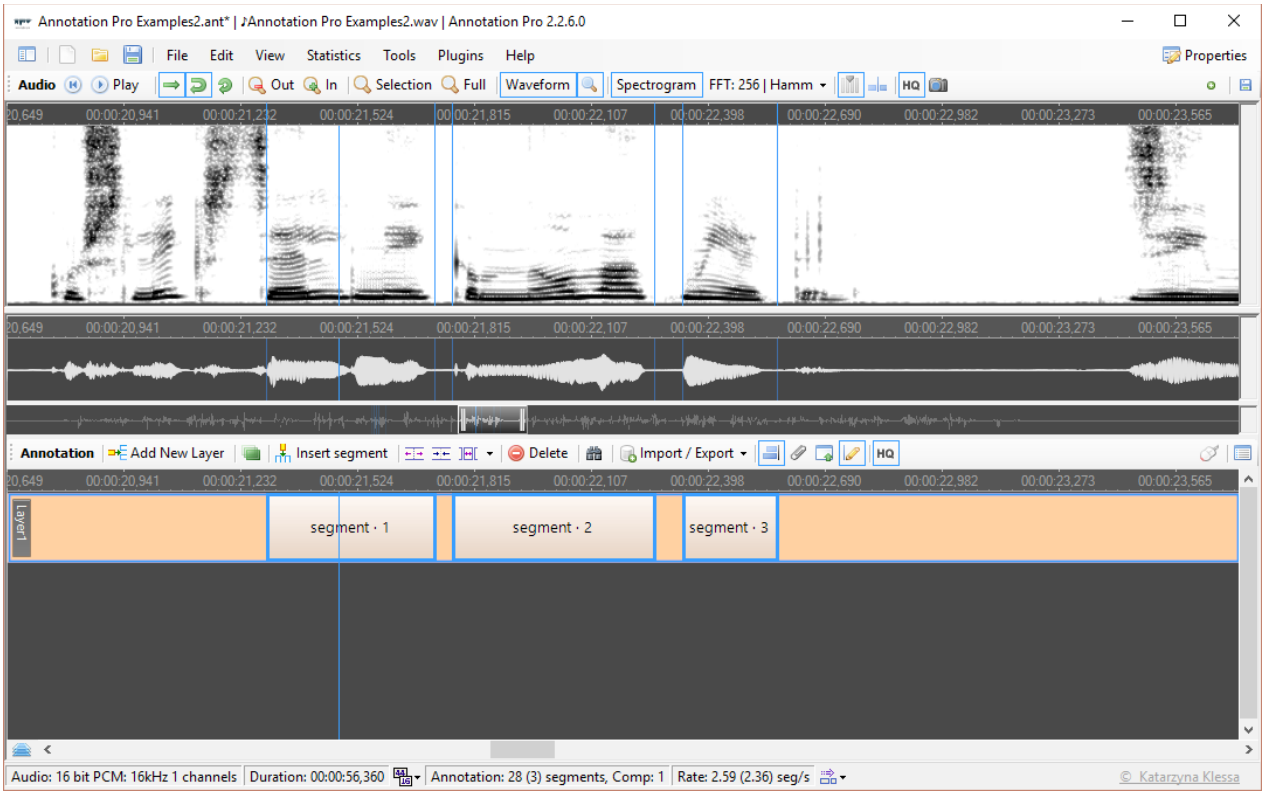
Consolidates two or more selected segments into one segment. There can't be any non-selected segments between the selected ones. The labels of the selected segments will also be consolidated into one label (the original labels will be put into the new segments and separated by spaces).

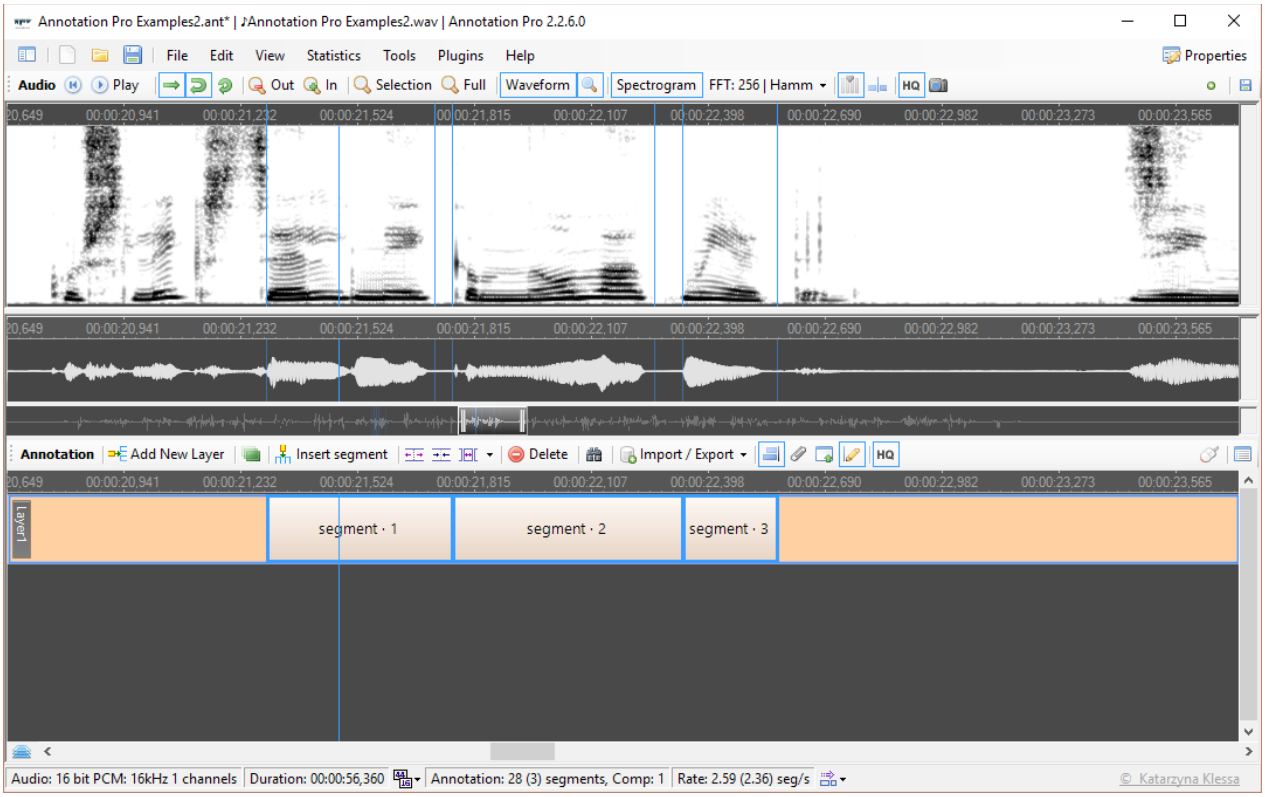




Auto Resize Segment

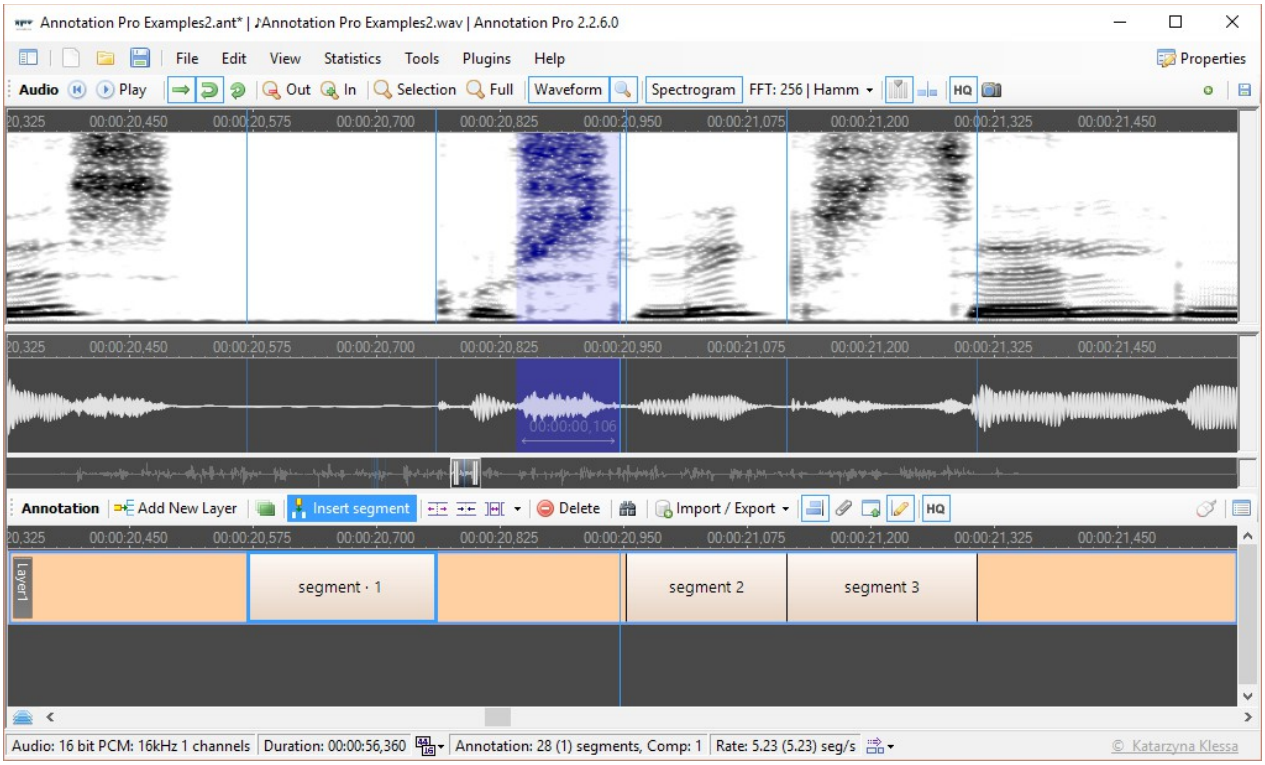
Automatically resize selected segment(s) to the left-hand neighboring segment.

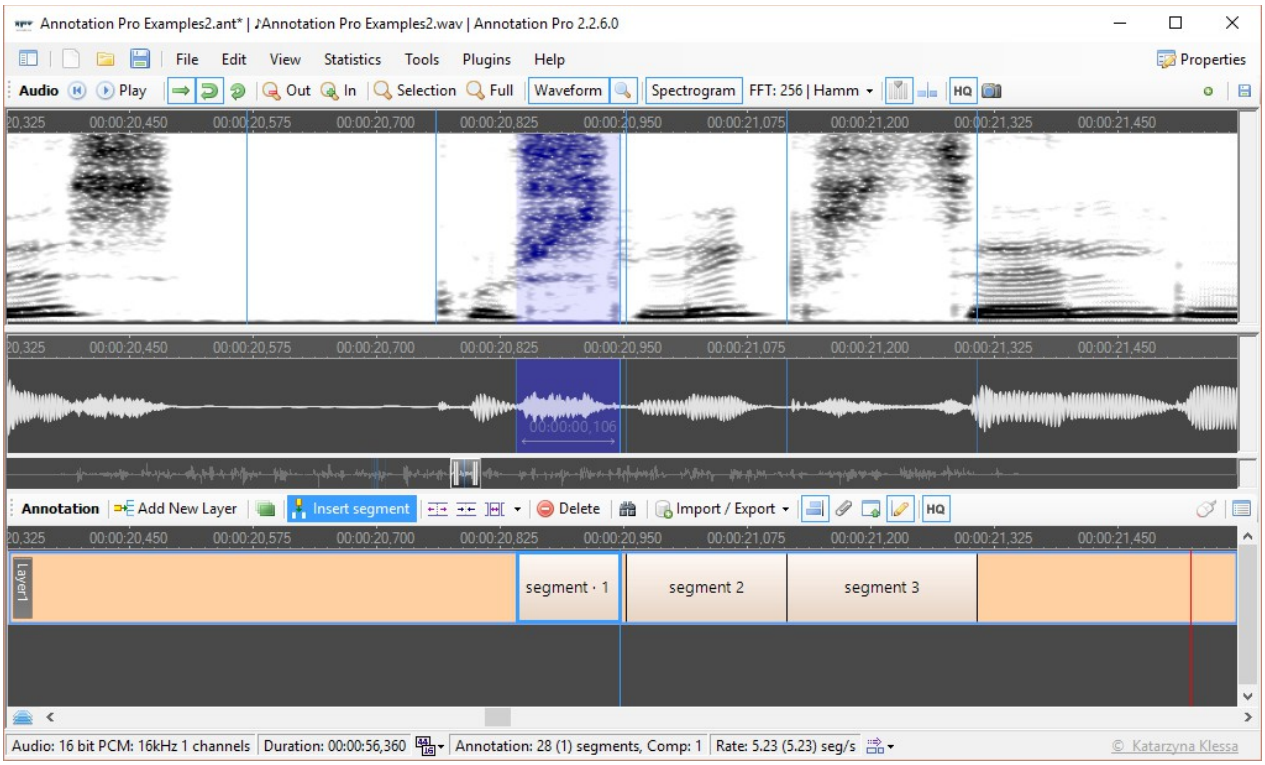




Resize To Audio Selection

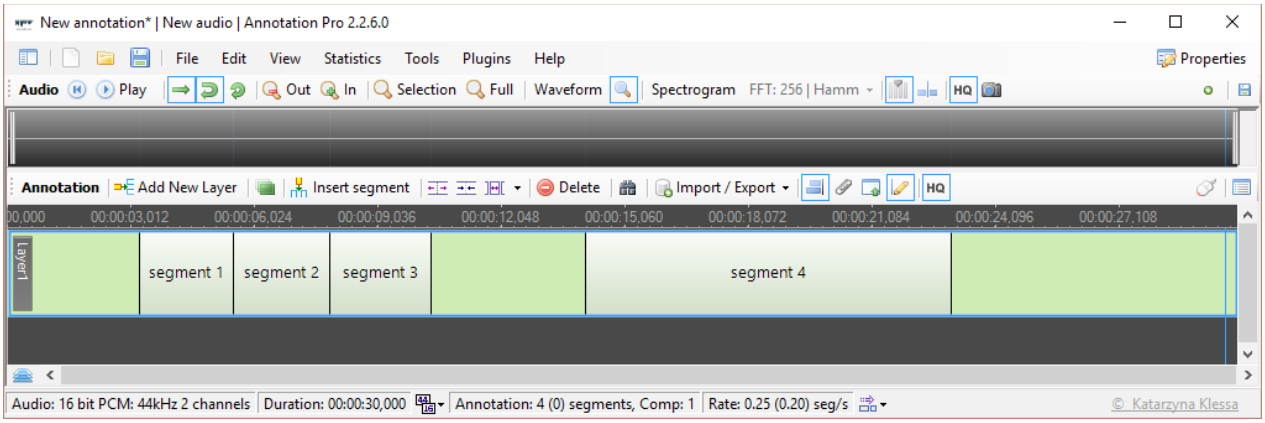
Resize segment to audio selection.

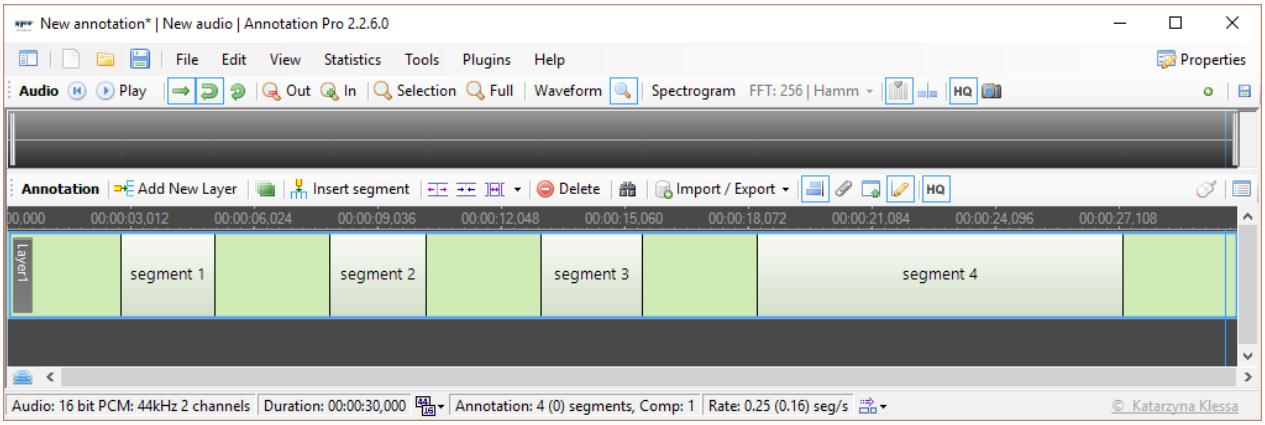




Space Segments Equally

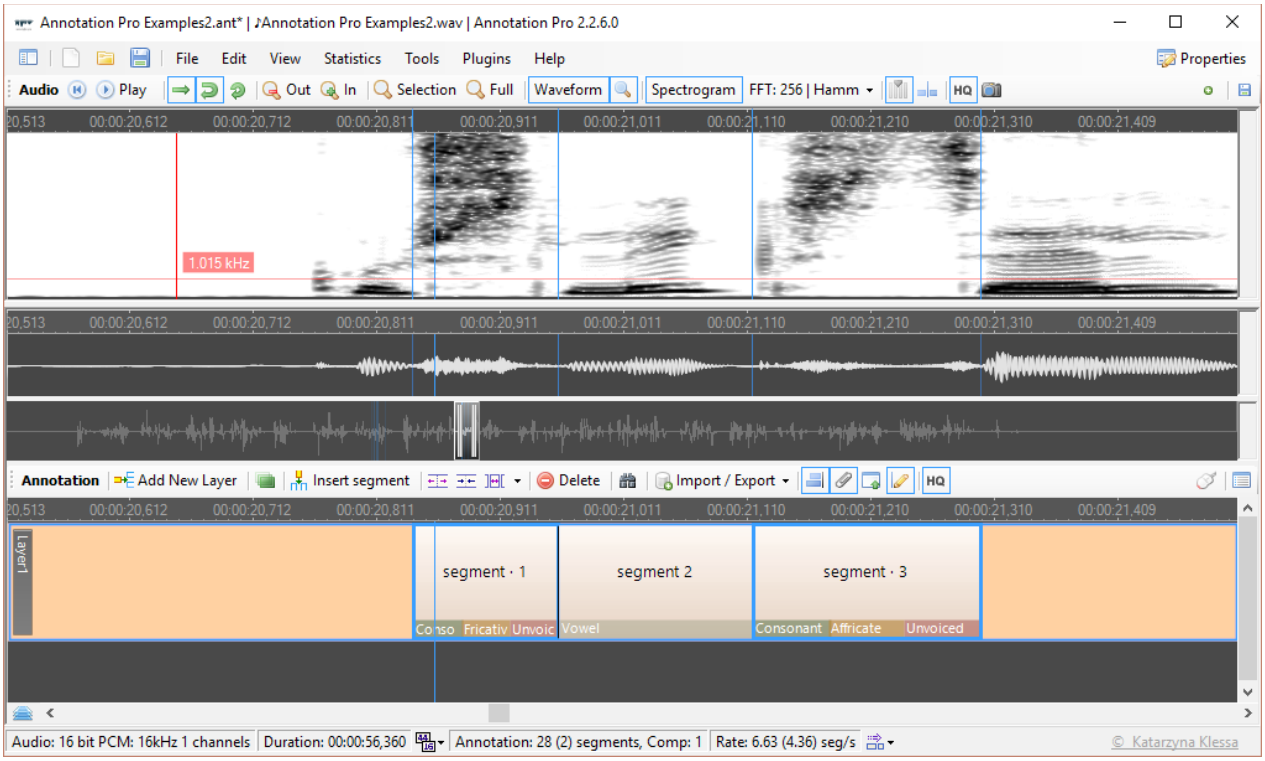
Space segments in equal distances from one another. If any segments are selected, the operation is done for the selected segments. Otherwise, it is done for all segments in the selected layer.

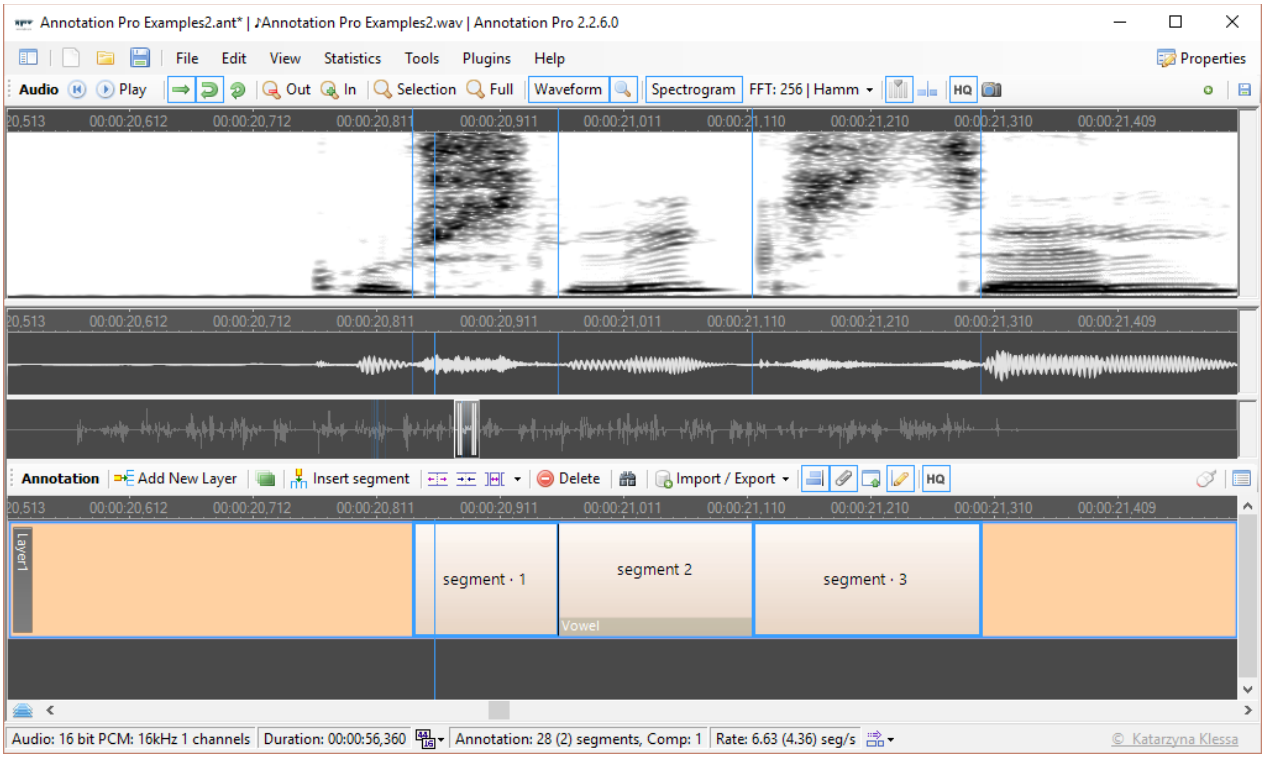




Clear Parameters

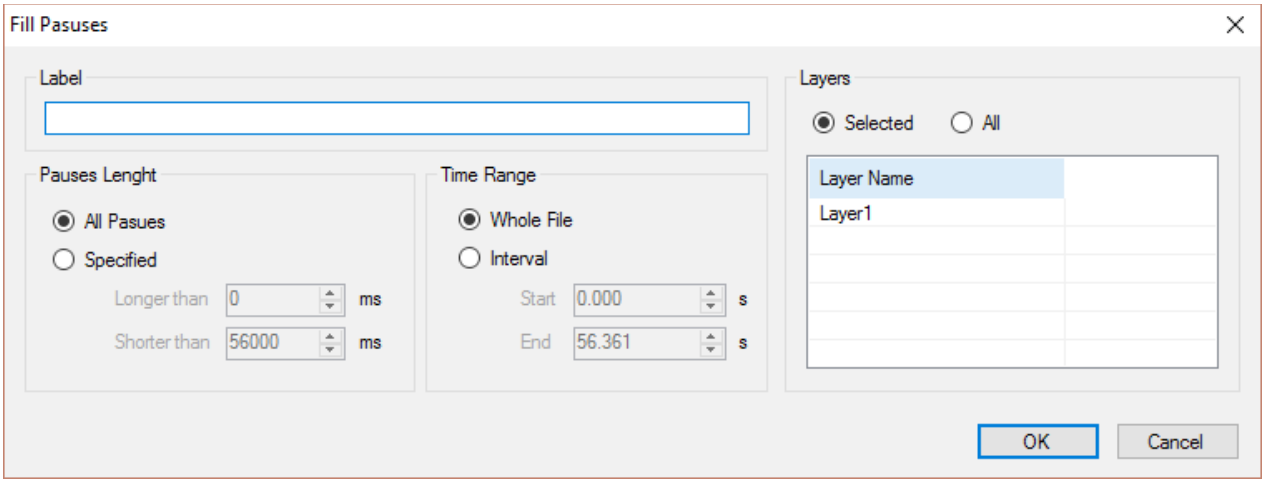
Clear parameters from all selected segments. With the Clear Parameters command, the contents of Parameter 1, Parameter 2, and Parameter 3 fields from all selected segments will be removed.





Fill Pauses

Automatically fill pauses (gaps / empty spaces) between segments with segments with a user-defined pause label. After choosing this option from menu, the following dialog window is displayed:



Label

Label to be used to mark the pause segments.

Pauses Length

Define whether all pauses (empty spaces) should be filled with the labeled pause segments or just the spaces having specified durations (longer / shorter than defined by the user).

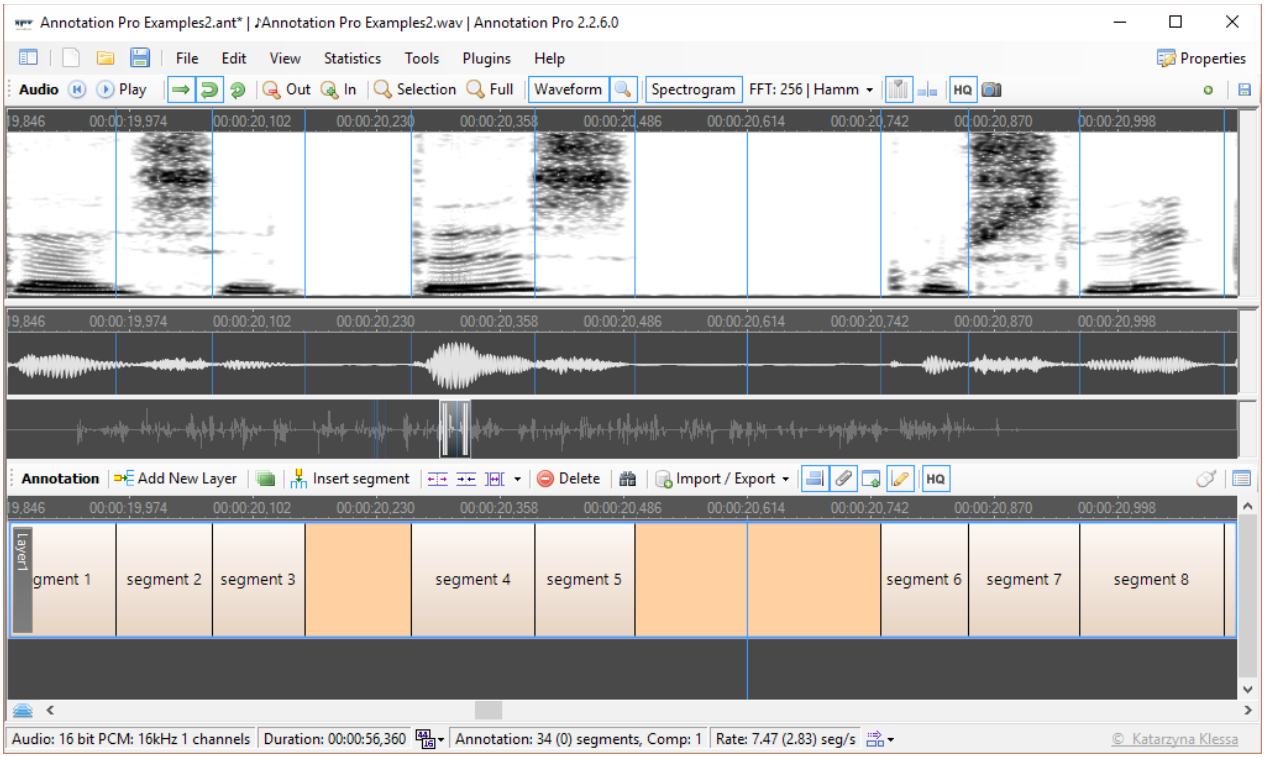
Time Range

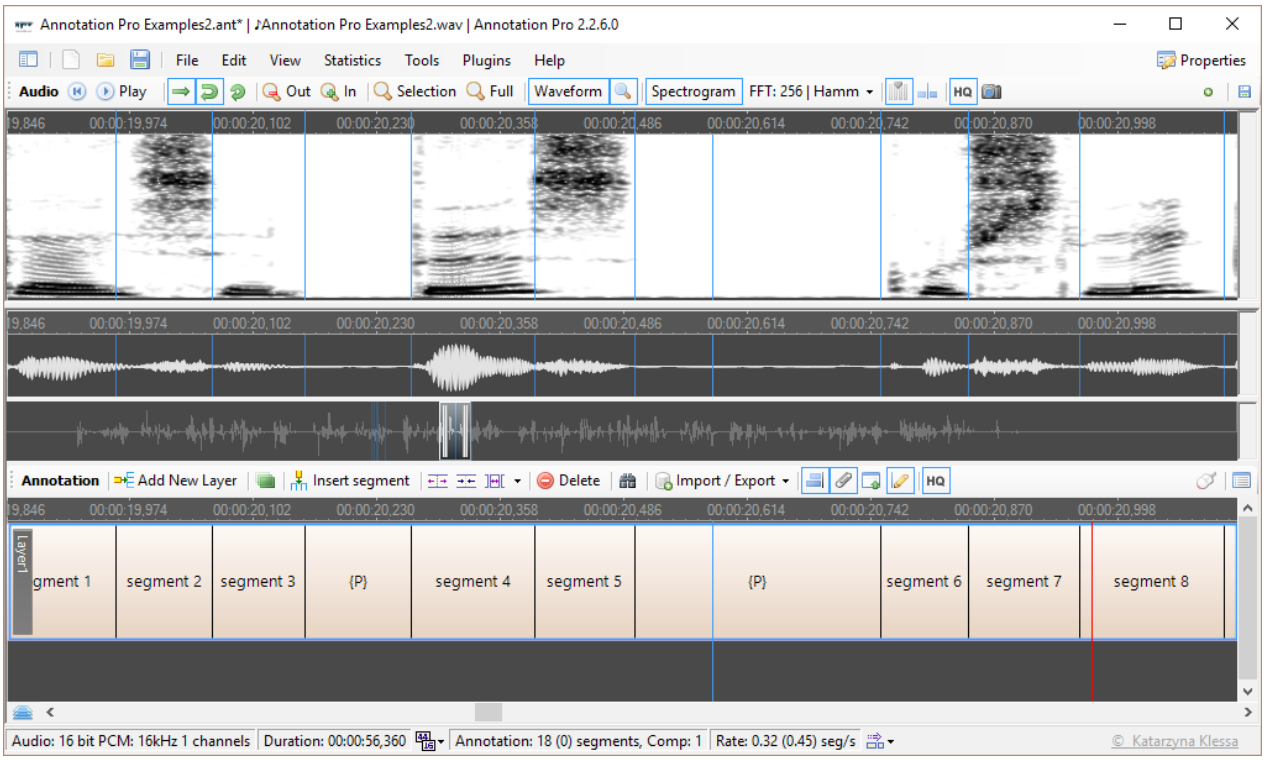
Time range for filling the pauses. The gaps can be filled for all the annotation or just for a fragment defined by the user by giving the start and end points of the fragment affected.

Layers

Gaps can be filled for all layers or only the ones selected by the user.

Pause filling example: When we define a pause label as {P} and use the Fill pauses option, all pauses (i.e. gaps between segments) are filled by segments with a {P} label.

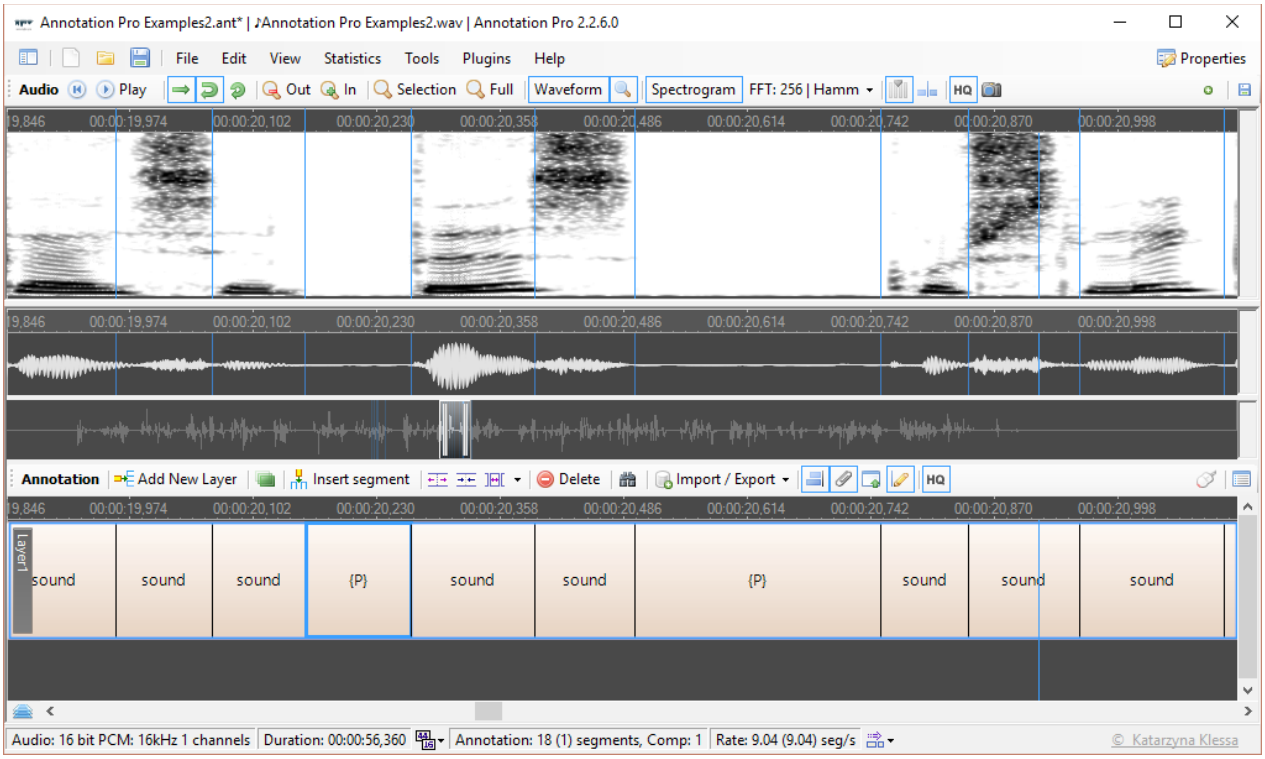


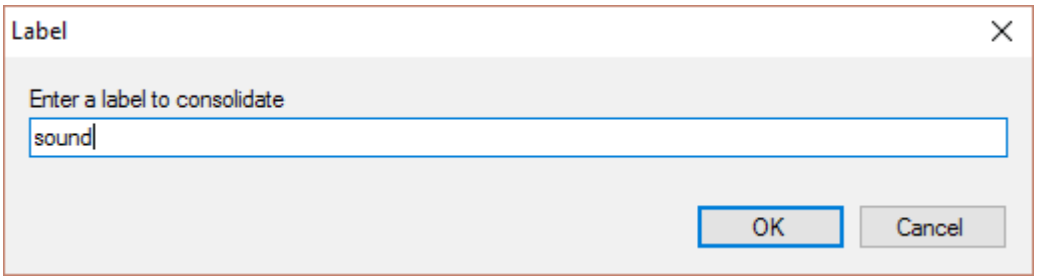


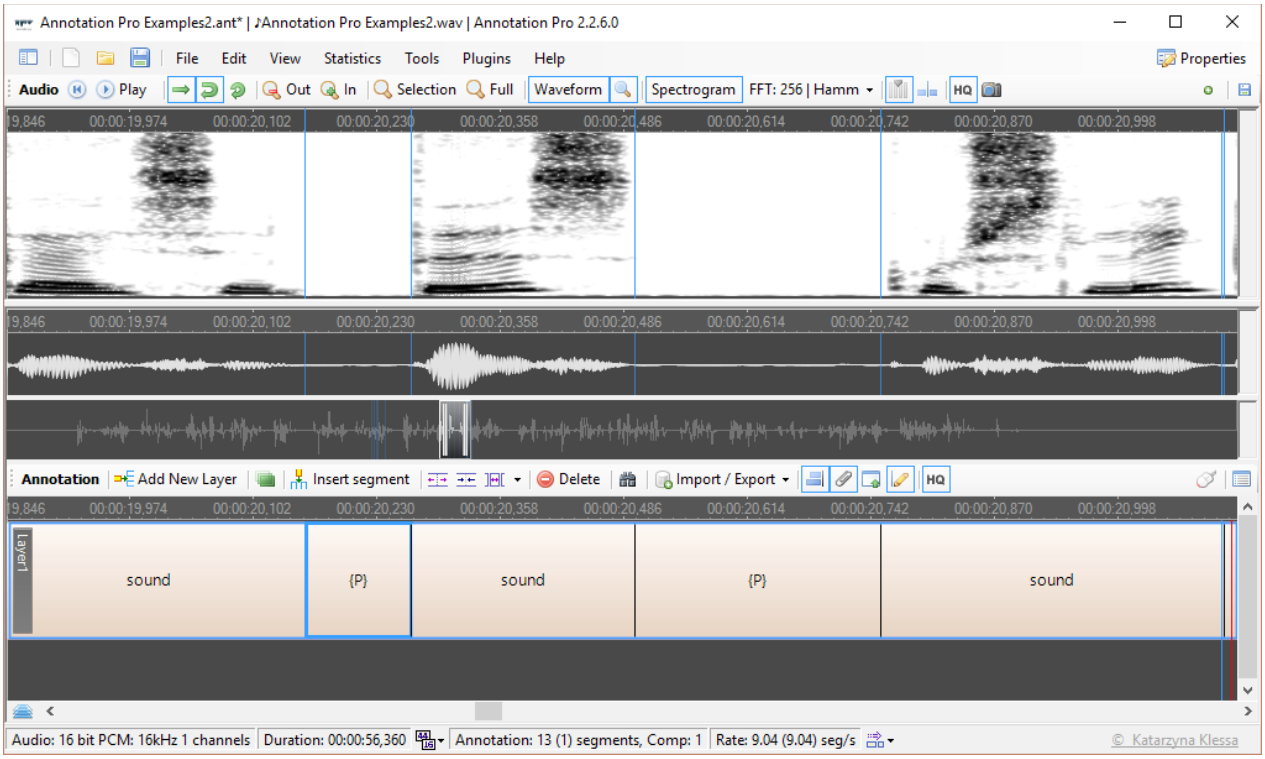
Consolidate

Consolidates neighboring segments having the same label. In some cases it might be useful to consolidate segments having the same labels into one. After selecting this

option from menu, a dialog window is displayed requesting for a label to be used for the newly created consolidated segments. Any label can be used, according to the user's preferences.

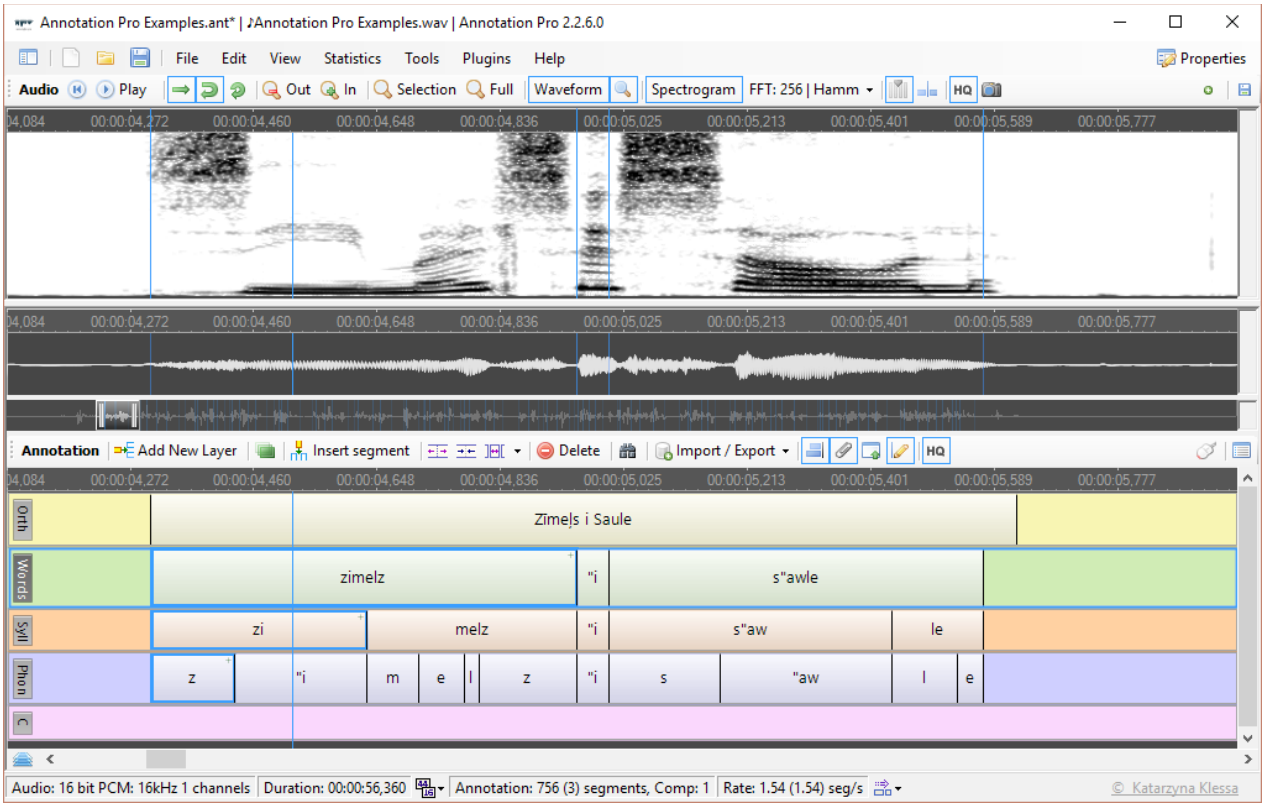






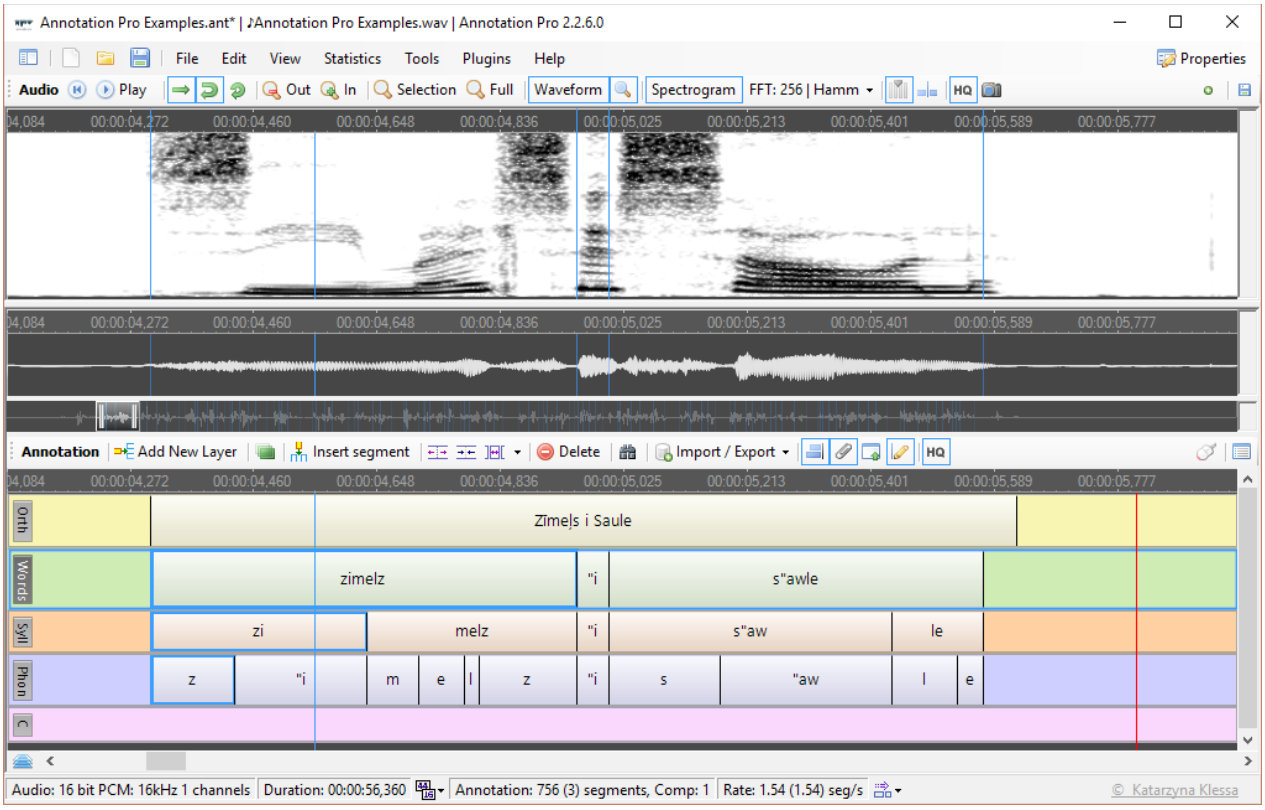
Group

Joining selected segments into a group. The segments become connected by a unique identifier. Segments belonging to a group can be visually recognized by a small plus mark in the top right corner of the segment. After clicking on one of the grouped segments, all the grouped segments become highlighted.



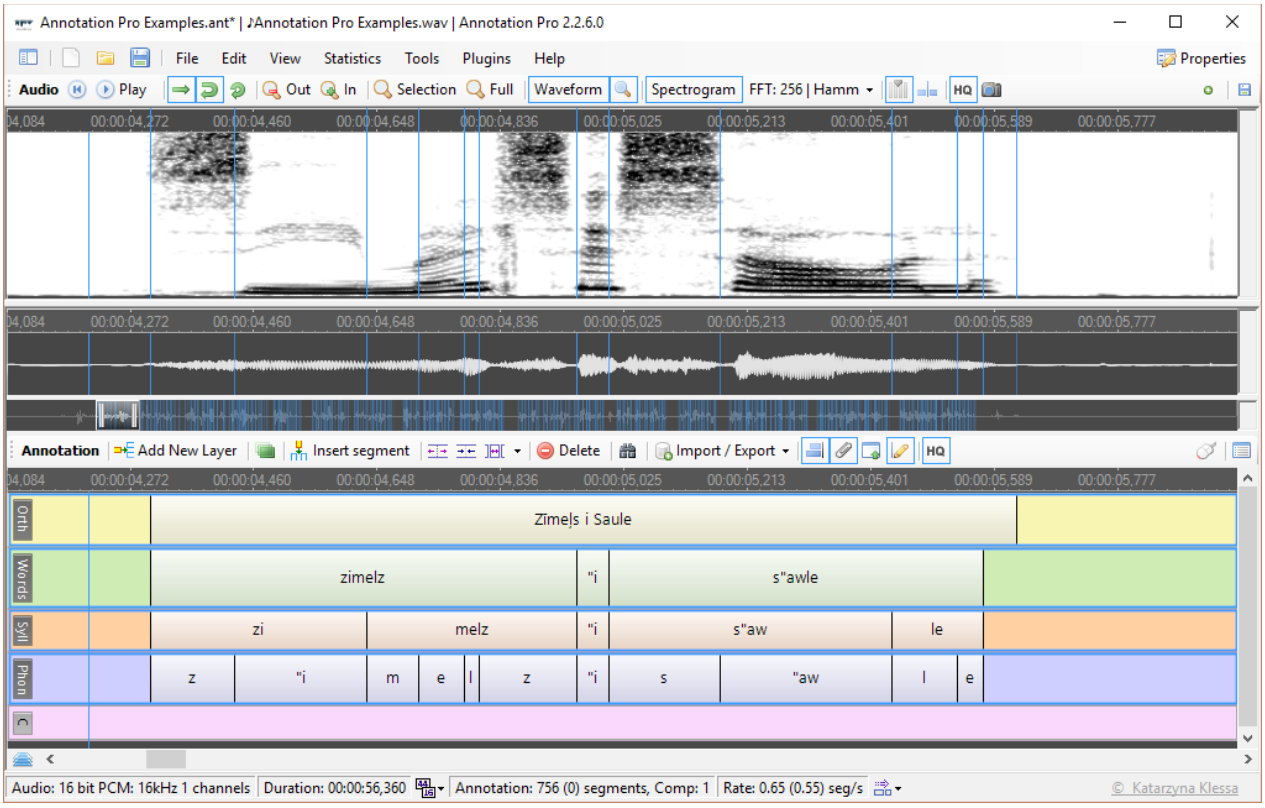
Ungroup

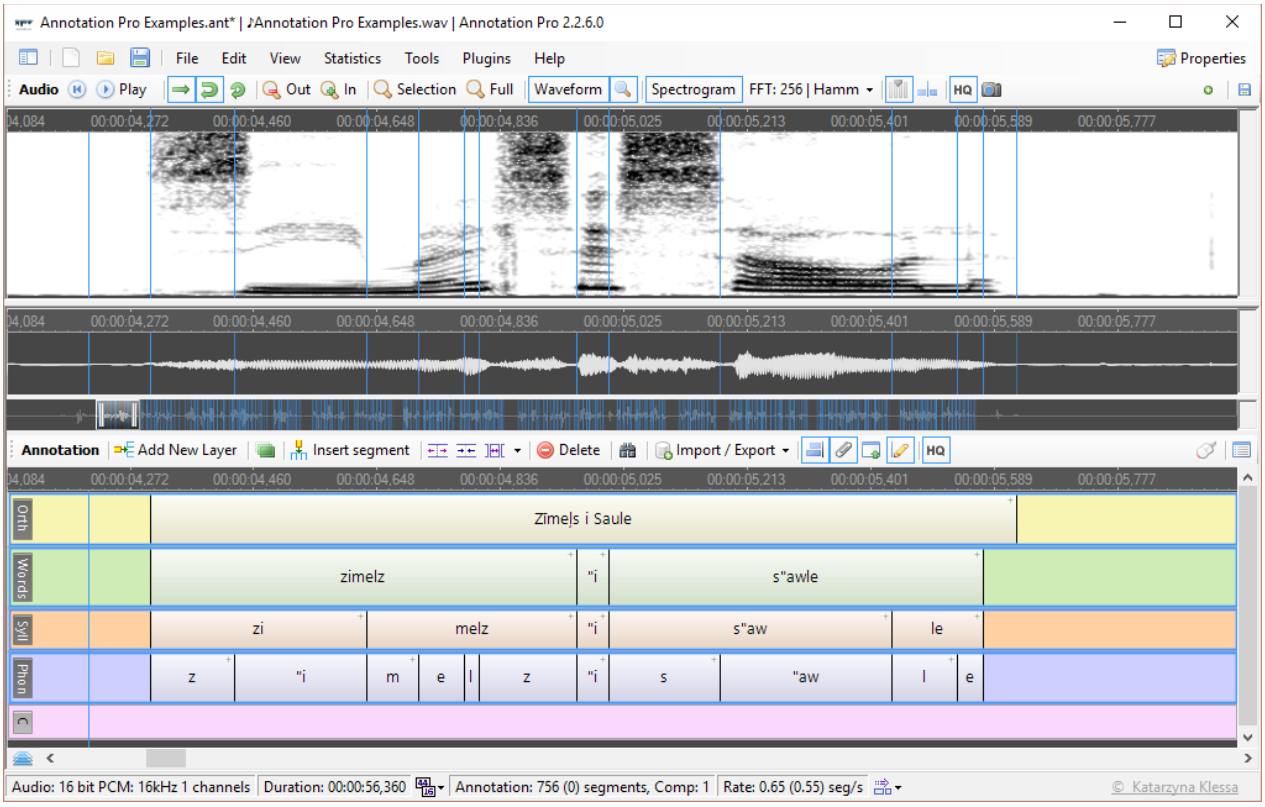
Ungroup the previously grouped segments. The plus mark is removed from the segment's display in the annotation layer(s).



Auto Group

Automatically group segments for two or more selected layers. Segments are grouped if they start or end at the same time in different layers. A small plus mark is displayed in the top right corner for all segments belonging to a group.



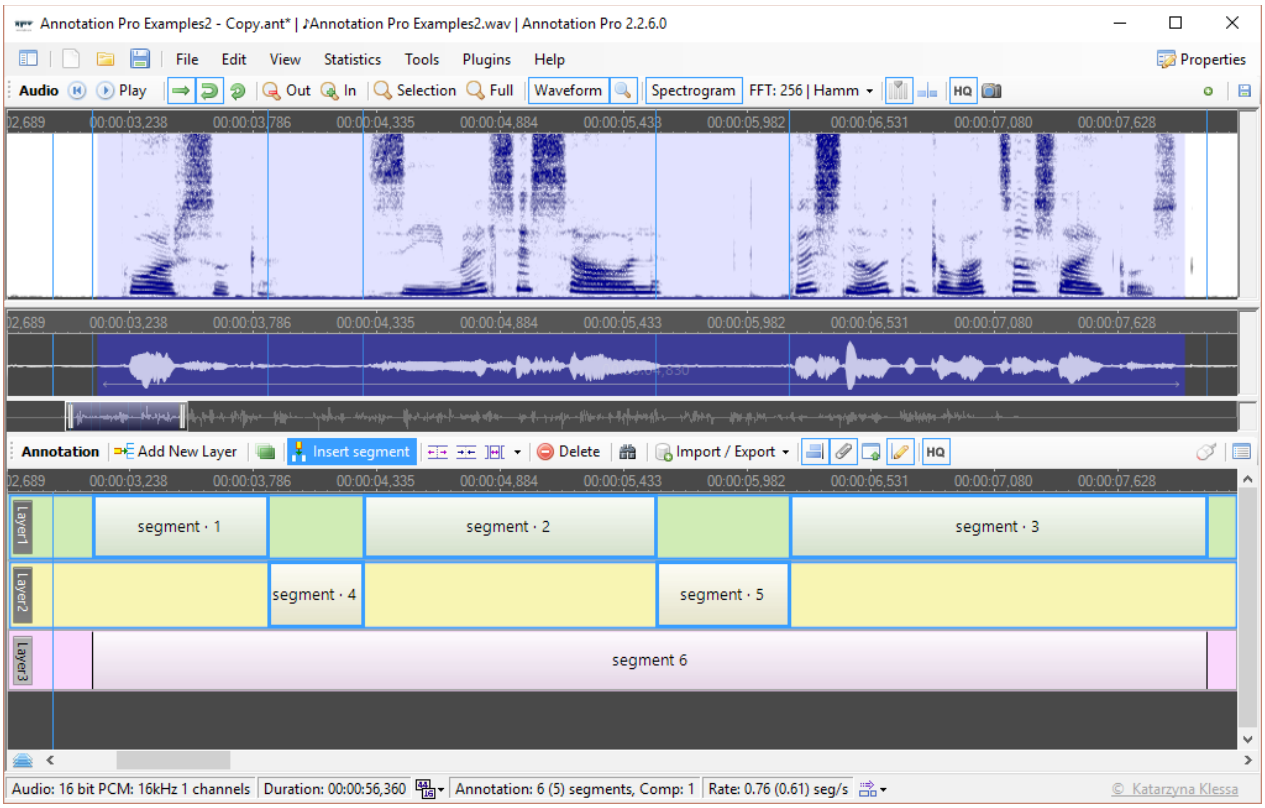


Select All

Select all segments in the selected layers.

Example. Select all segments in selected layers.

We select Layer1 and Layer2 and choose Select All. All segments in the selected layers become selected and highlighted.

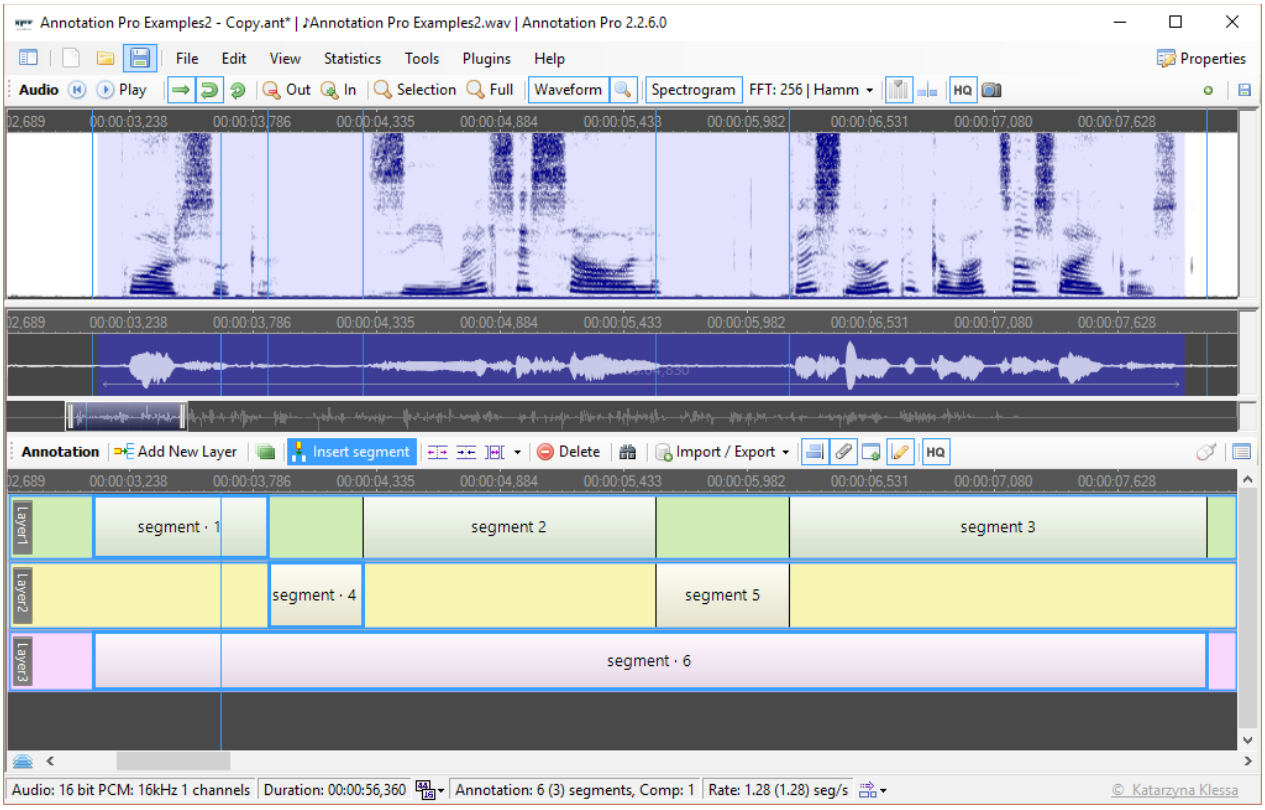


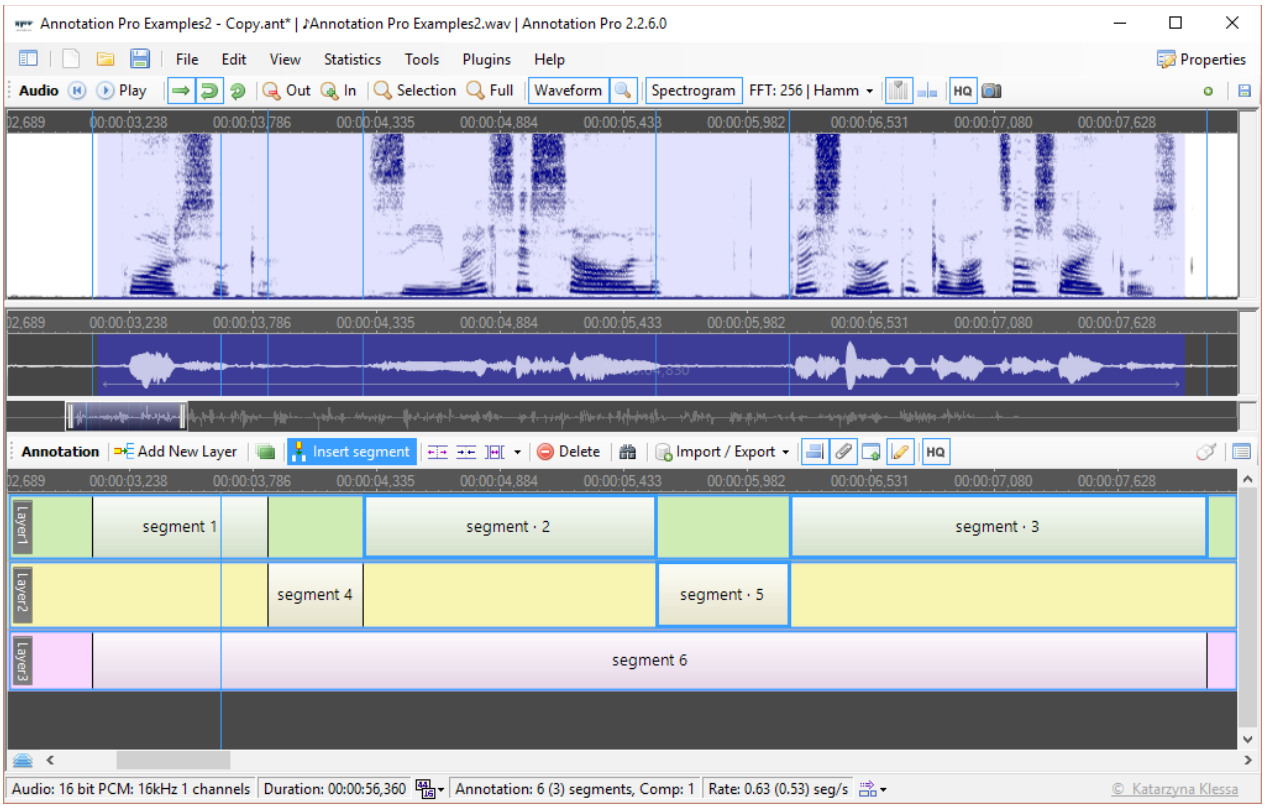
Invert selection

Invert selection in the selected layers.

Example. Invert selection.

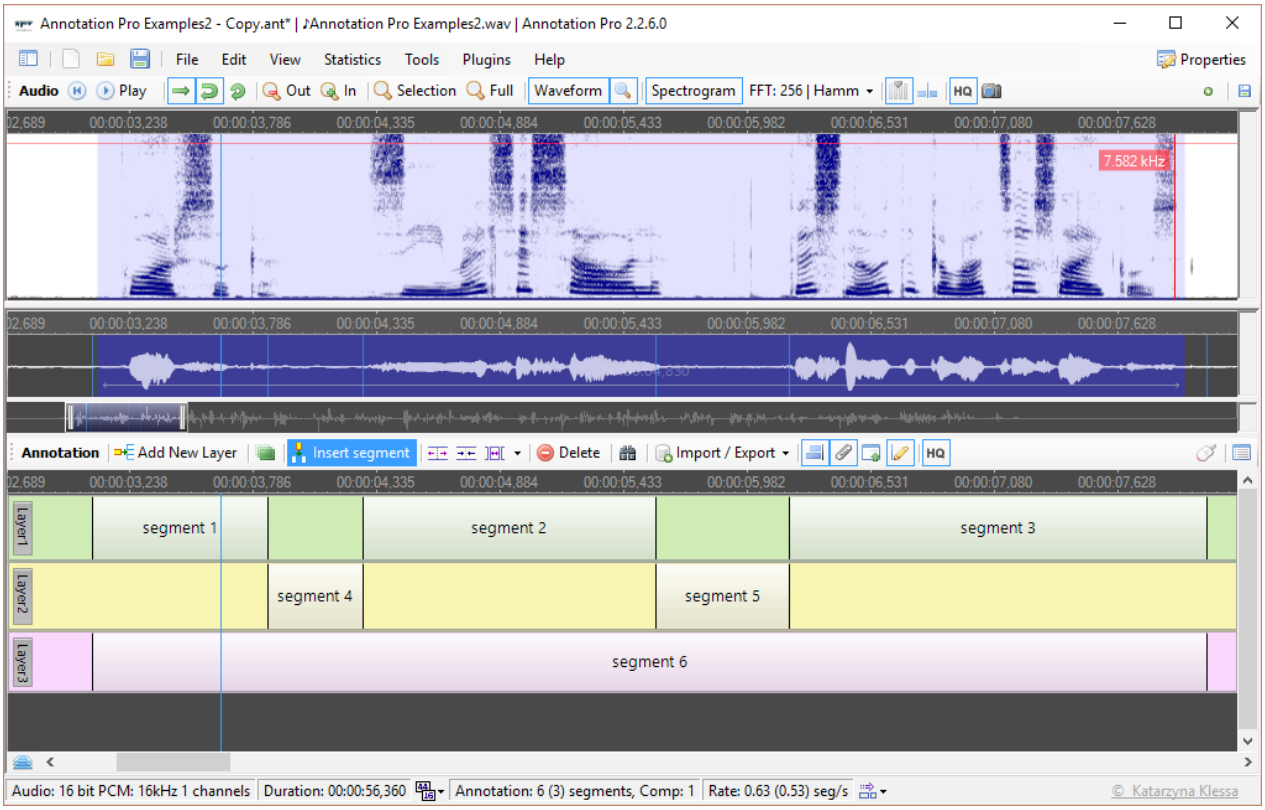
In the first step, we select only segment 1, segment 4 and segment 6. When we choose Invert selection, these segments become deselected and the remaining ones are selected and highlighted (blue frame).


Annotation Pro Examples2 - Copy.ant* | ♪Annotation Pro Examples2.wav | Annotation Pro 2.2.6.0
File Edit View Statistics Tools Plugins Help
Properties
Audio Play Out In Selection Full Waveform Spectrogram FFT: 256 | Hamm HQ
Annotation Add New Layer Insert segment Delete Import / Export HQ
Layer1
segment · 1
segment 2
segment 3
Layer2
segment · 4
segment 5
Layer3
segment · 6
Audio: 16 bit PCM: 16kHz 1 channels
Duration: 00:00:56,360
Annotation: 6 (3) segments, Comp: 1
Rate: 1.28 (1.28) seg/s
© Katarzyna Klessa


Annotation Pro Examples2 - Copy.ant* | ♪Annotation Pro Examples2.wav | Annotation Pro 2.2.6.0
File Edit View Statistics Tools Plugins Help
Properties
Audio Play Out In Selection Full Waveform Spectrogram FFT: 256 | Hamm HQ
Annotation Add New Layer Insert segment Delete Import / Export HQ
Layer1
segment 1
segment · 2
segment · 3
Layer2
segment 4
segment · 5
Layer3
segment 6
Audio: 16 bit PCM: 16kHz 1 channels
Duration: 00:00:56,360
Annotation: 6 (3) segments, Comp: 1
Rate: 0.63 (0.53) seg/s
© Katarzyna Klessa

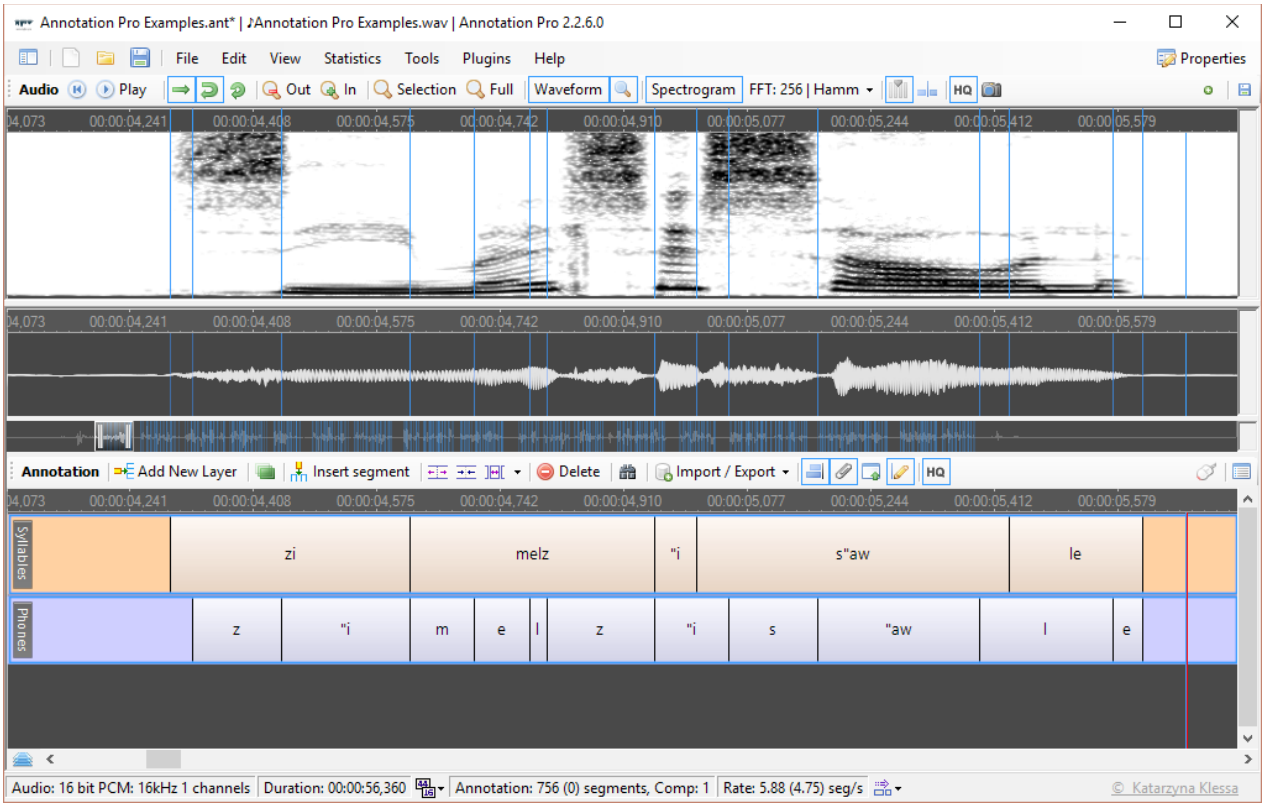
Clear Selection

Clear selection for any selected segments in the selected layers. No segments are selected after using this option.

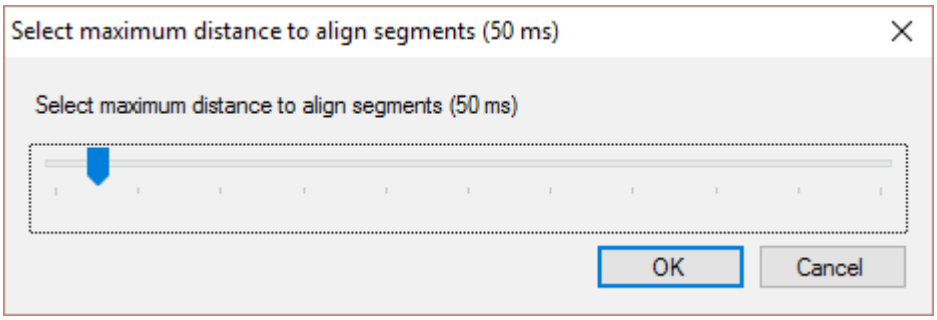


Auto Align

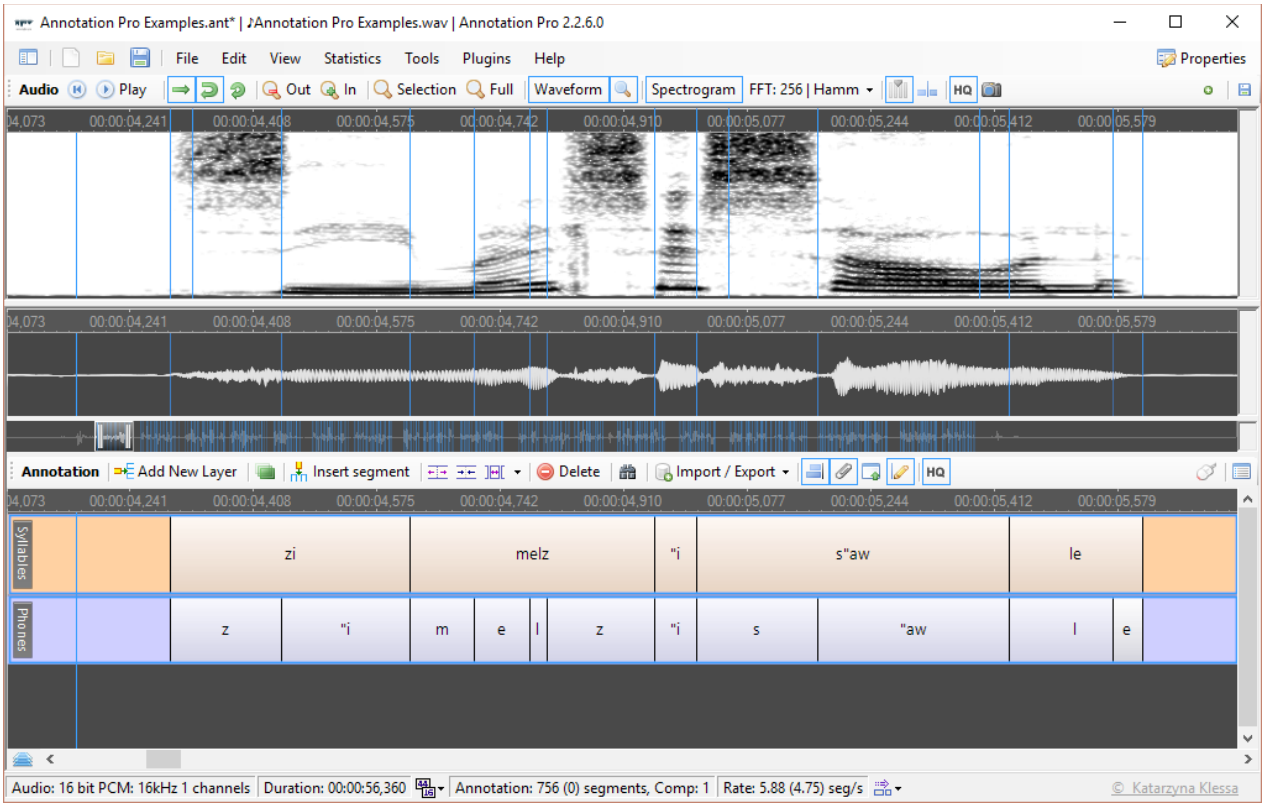
Auto align segment positions in two or more selected layers. The first layer is used as the pattern to match, i.e., the segment boundary positions in the remaining layers are automatically aligned to the boundary positions in the first layer. The alignment takes place only for for segment boundaries at a distance below or equal to the 'maximum distance' defined by the user.



After selecting the Auto Align option from the menu, the following dialog window is displayed:



The user can define the maximum distance between boundaries to be aligned (50 ms in this example). All other boundary positions will remain unchanged.

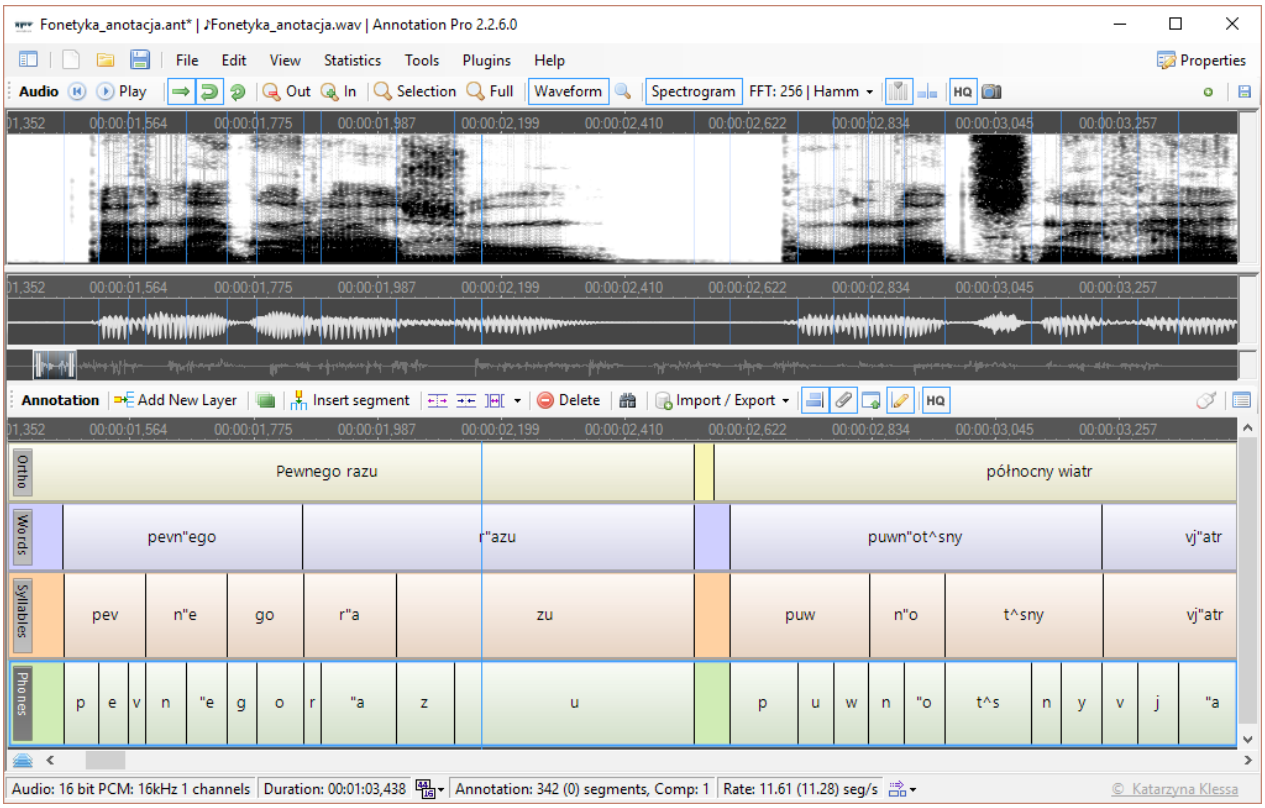


Auto Segmentation

Auto segmentation tool is an intelligent tool supporting automatic conversion into SAMPA and segmentation of orthographic annotation input into words, syllables and individual phones. Unfortunately, at the current stage, the availability of the tool is restricted and can't be made freely available due to copyright issues (independent from Annotation Pro license). With a view to support freely available automatic segmentation and time-alignment, Annotation Pro offers extended import-export options from external formats, e.g., SPPAS automatic annotation tool's format .xra (Bigi, 2016). Thanks to this, it is possible to easily use automatically segmented data for all languages supported in SPPAS (e.g., English, French, Chinese or Polish); to learn more go to: www.sppas.org.

Example: Automatic syllabification

Automatic segmentation of a Polish orthographic input on the level of words, syllables and phonemes.



Go To

Commands to move between segments.

- Go To Start
- Go To End
- Go To / Prev Segment
- Go To / Next Segment
- Go To / Prev Segment & Selection
- Go To / Next Segment & Selection

Go To / Start

Go to (move Audio Cursor) to the beginning of the annotation file.

Go To / End

Go to (move Audio Cursor) to the end of the annotation file.

Go To / Prev Layer

Go to the previous annotation layer (up).

Go To / Next Layer

Go to the next annotation layer (down).

Go To / Prev Segment

Go to the previous segment (left) within the selected layer.

Go To / Next Segment

Go to the next segment (right) within the selected layer.

Go To / Prev Segment & Selection

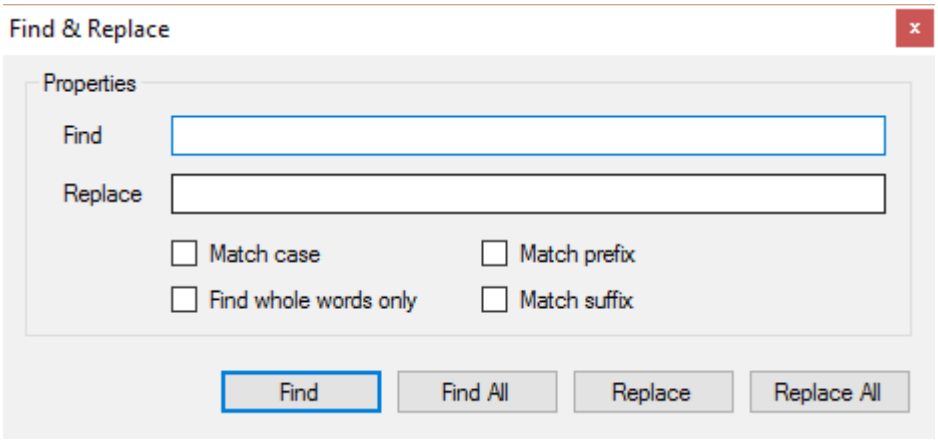
Go to the previous segment (left) within the selected layer and select audio for this segment.

Go To / Next Segment & Selection

Go to the next segment (right) within the selected layer and select audio for this segment.

Find & Replace

Search any text in the annotations and replace it with any other text defined by the user. The Find & Replace dialog window is very similar to ones used in many other programs:



Find Field

The searched text (or individual character).

Replace Field

The phrase to be used as the replacement for the searched text.

Match case

Match letter case.

Find whole words only

Only find and replace when the text corresponds exactly to the whole word in the Find Field.

Match prefix

Find and replace expressions beginning with the word searched.

Match suffix

Find and replace expressions ending with the word searched.

Find

Find and select the first (or the next) segment corresponding to the defined criteria.

Find All

Find and select all segments corresponding to the defined criteria.

Replace

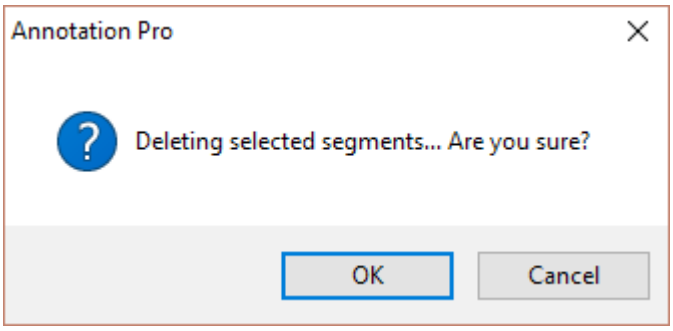
Replace text for the first (or the next) segment.

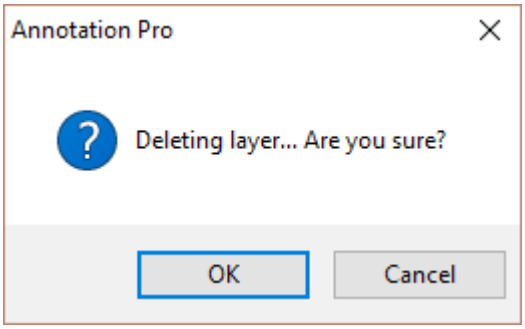
Replace All

Replace text for all segments.

Delete

Remove selected segments or layers. Select segments in order to remove them. Select a layer (or layers) to remove it.





View: configuring signal and annotation display

The View menu includes commands for adjusting the application view. Switching off / on the panels and zoom in / out.

- Panels
  - Workspace
  - Spectrogram
  - Waveform

    - Properties
    - Feature Space
- Zoom In
- Zoom Out
- Zoom To Audio Selection
- Zoom To Full Audio
- Zoom To All Segments
- Zoom To Selected Segments

Panels

Show / Hide panel commands for all panels in the program window.

- Workspace
- Spectrogram
- Waveform
- Properties
- Feature Space

Workspace

Show / Hide Workspace Panel.

More about Workspace Panel

Spectrogram

Show / Hide Spectrogram.

More about Spectrogram

Waveform

Show / Hide Waveform.

More about Waveform

Properties

Show / Hide Properties Panel.

More about Properties Panel.

Feature Space

Show / Hide Feature Space.

More about Feature Space Panel

Zoom In

Change zoom. Zoom in annotation labels and audio to display more details.

Zoom Out

Change zoom. Zoom out annotation and audio to display a larger fragment.

Zoom To Audio Selection

Change zoom to audio selection. Zoom to show only the selected fragment on the whole panel.

Zoom To Full Audio

Change zoom to display the whole recording and annotations.

Zoom To All Segments

Adjust zoom so that all existing segments will be displayed on the screen.

Zoom To Selected Segments

Adjust zoom so that the selected segments will be displayed on the screen..

Statistics

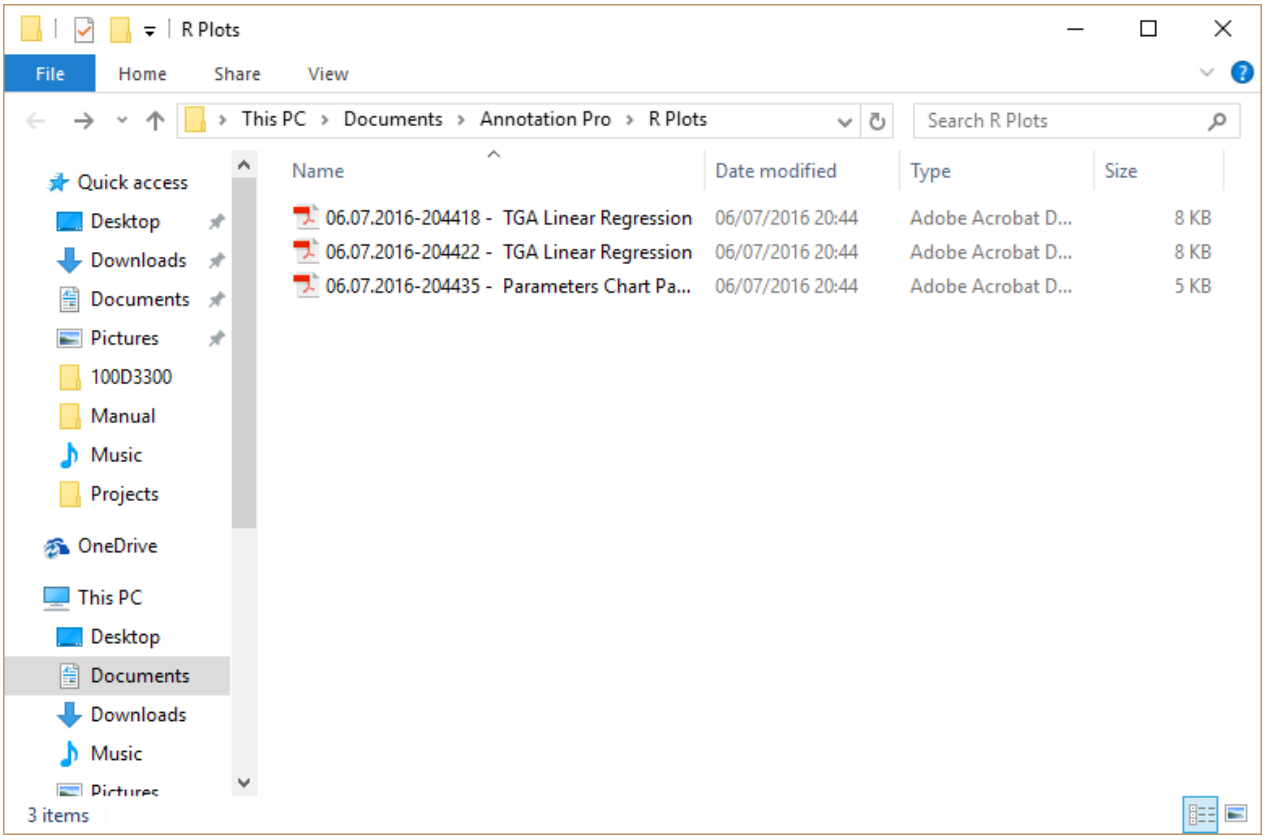
Calculating statistics and plotting tools built into Annotation Pro.

- Open R Plots Folder
- Parameters
- Time Group Analysis

More About Plotting with R Plots

Open R Plots Folder

Open folder containing the recent files obtained with R plotting scripts. Every chart plotted with R in Annotation Pro is saved to this folder.



More about Application Folders

More about R Plots

Parameters

Create plot using the values of segment parameters. After launch, the following dialog window is displayed:

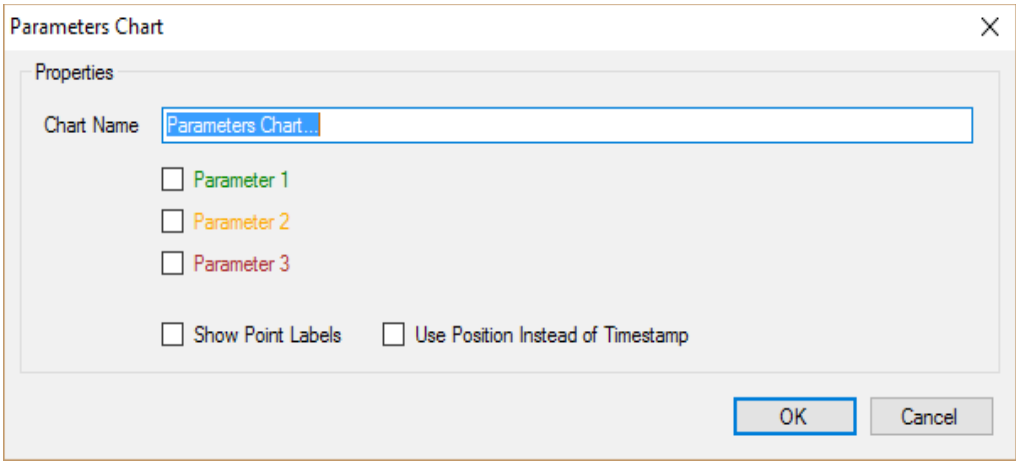


Chart Name

The name of the chart.

Parameter 1, Parameter 2, Parameter 3

The parameters to be used for plotting (user-defined).

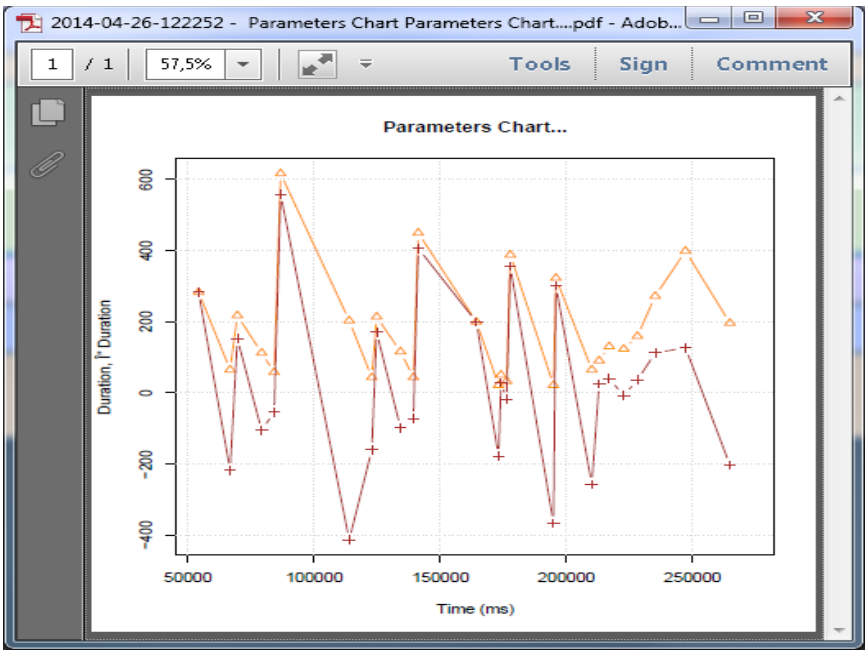
Show Point Labels

Display point labels on the plot.

Use Position Instead of Timestamp

Use segment position instead of timestamps for plotting for X-axis.

Example plot

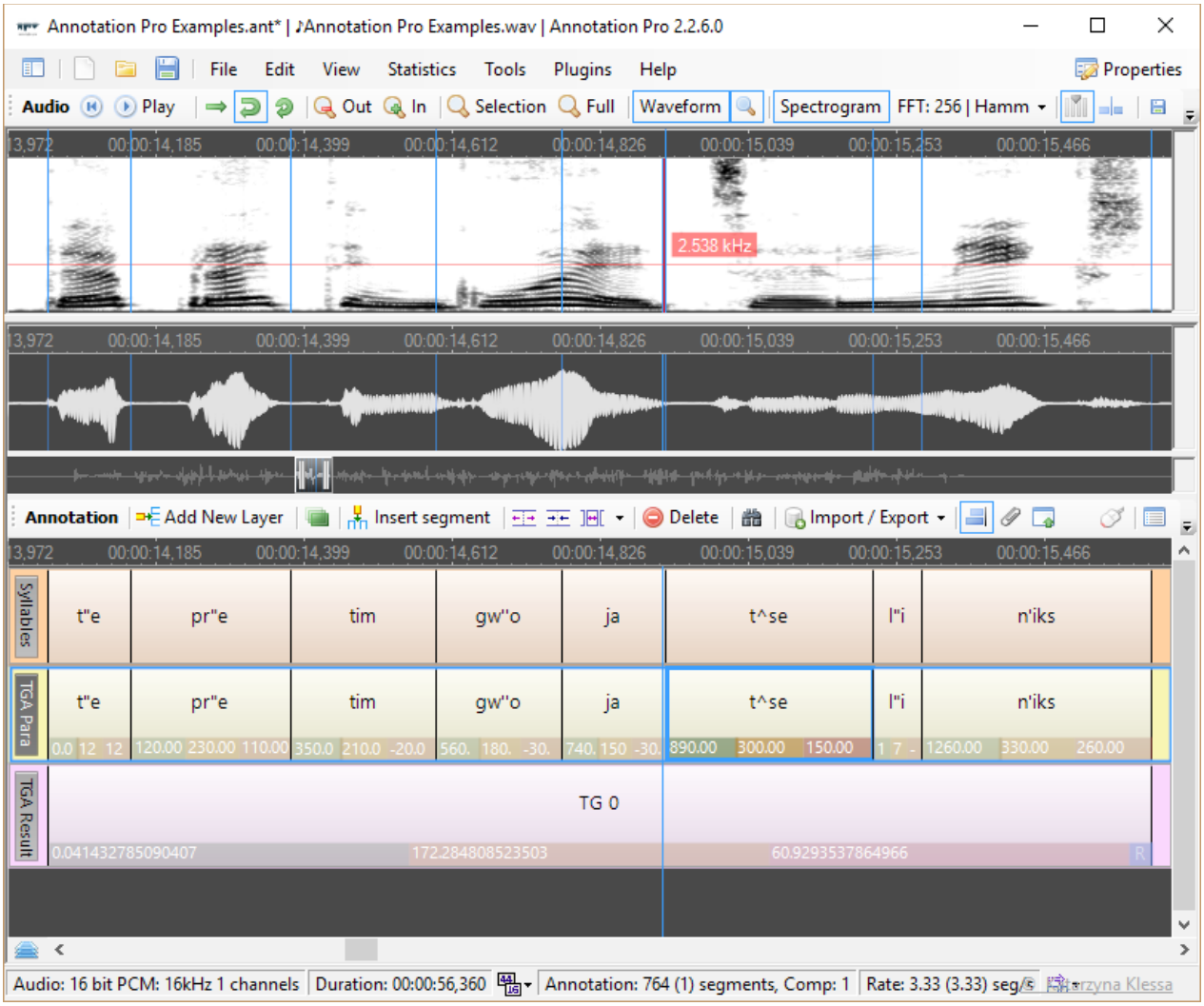


More about parameters in Segment Properties

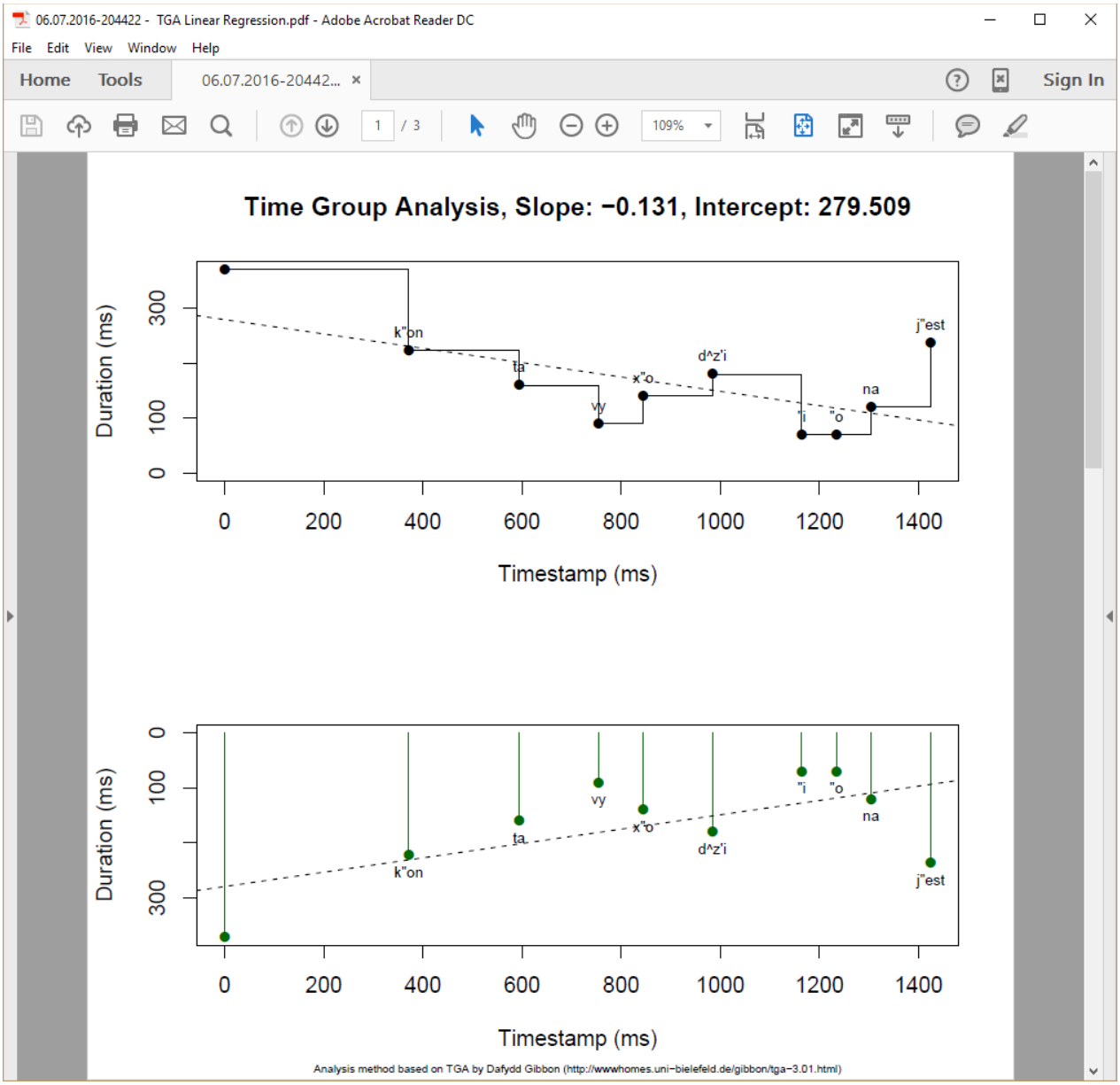
More about R Plots

Time Group Analysis

Time Group Analysis (TGA) statistics and plots (following the approach implemented in the on-line tool named Time Group Analyzer by Gibbon (2013): http://wwwhomes.uni-bielefeld.de/gibbon/TGA/, and integrated as Annotation Pro + TGA by Klessa & Gibbon, 2014). This component provides options for timing patterns analysis, primarily acceleration and deceleration patterns within interpausal time groups of segments. Two layers are created as a result of TGA. One of them is a copy of the input layer, additionally including basic durational statistics used for the calculations saved as segment parameters. In the second layer, for each interpausal group of segments, a new segment is created providing the results of TGA: duration regression slope, duration regression intercept, and nPVI.



For each segment within a time group (TG), an R script is automatically generated which makes it possible to create the plot by just clicking once.



[More about parameters in Segment Properties]

[More about R Plots]

Tools

Menu Tools includes options enabling the configuration of the program. The Options commands includes advanced settings.

- [Auto Add To Workspace]
- [Follow Cursor]
- [Auto Rewind]

- Loop Audio
- Magnify
- Boundaries
- Black & White
- Snap To Segments
- Stick To Neighbors
- Auto Selection
- Auto Edit Mode
- Auto Save Open Audio
- Open Annotation XML
- Open Data Folder
- Options

Auto Add To Workspace

Automatically add open files to Workspace.

Follow Cursor

Follow cursor. Waveform view follows cursor when the sound is played.

Auto Rewind

Auto rewind. After stopping the sound, the cursor goes back to start position.

Loop Audio

Loop audio. After playing the signal, play it again from the beginning. Repeat sound playback until stopped by the user.

Magnify

Magnify waveform screen display. Useful with low-energy or noisy recordings.

Boundaries

Show segment boundaries in the audio panel on the waveform and spectrogram display). A useful feature for manual inspection of segmentation.

Black & White

The default setting of the audio panel uses dark gray background. Use this option to display audio panel in black and white (white background). Useful for printing out screenshots for your publications.

Snap To Segments

If selected, the segments are snapped to neighboring segments during edition. Useful for manual segmentation and fine-grained adjustments of segment position.

Stick To neighbors

If selected, the boundaries of two directly neighboring segments are treated as one common boundary (like one boundary marker) and can be moved together.

Auto Selection

After clicking on a segment, the corresponding fragment of the audio segment becomes automatically selected and highlighted.

Auto Edit Mode

Auto Edit Mode. Recommended for advanced users. Insert segment boundary at cursor position. In an empty layer, insert segments into the whole space available in the annotation layer while the segment boundary is inserted at the cursor position. If the cursor is over an existing segment, the segments is divided in two at the cursor position. This mode can be used together with sound playing as a quick mode of preliminary signal segmentation.

Remember Open Audio Files

Automatically add the currently open wave file to Audio Files that are embedded to the *.ant file together with annotations. This way it becomes possible to create a single .ant file containing all sounds and annotations. One or more audio files can be embedded to one annotation, useful e.g. for multi-speaker conversation recordings.

Cursor Follow Edit

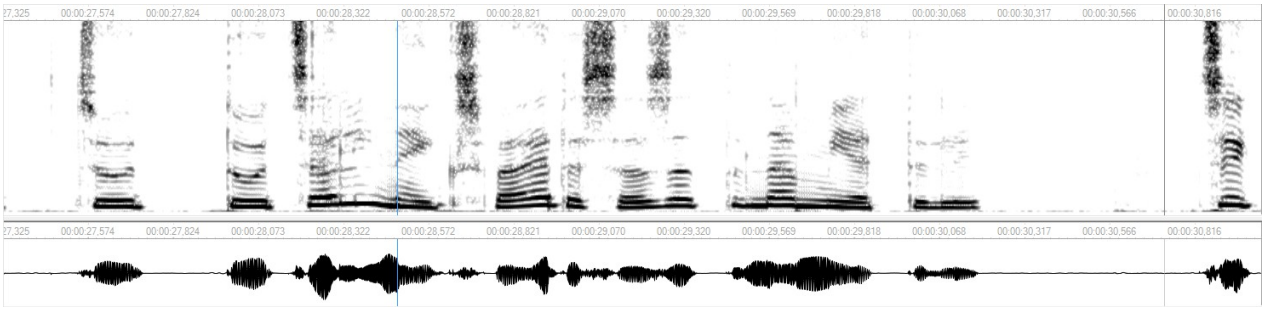
Cursor follow edit.

Show Edit Boundaries

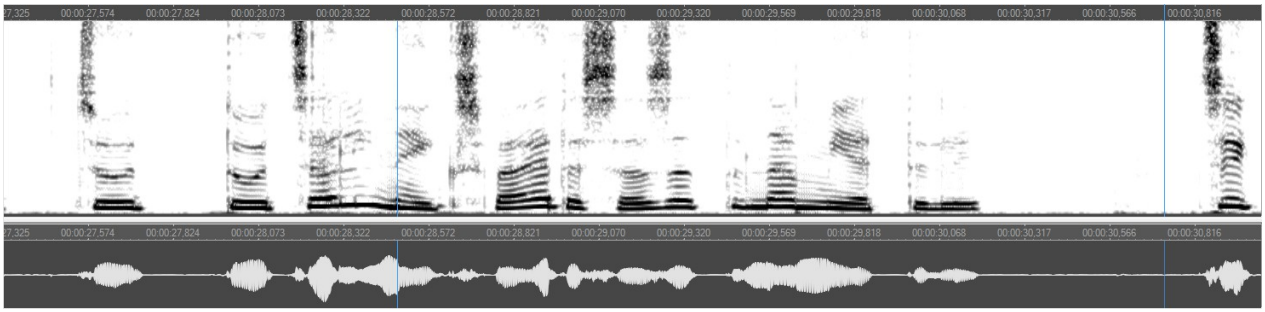
Show edit boundaries.

Take Audio Screenshot

Take audio screenshot. Only spectrogram and/or waveform currently visible on the screen will be stored.

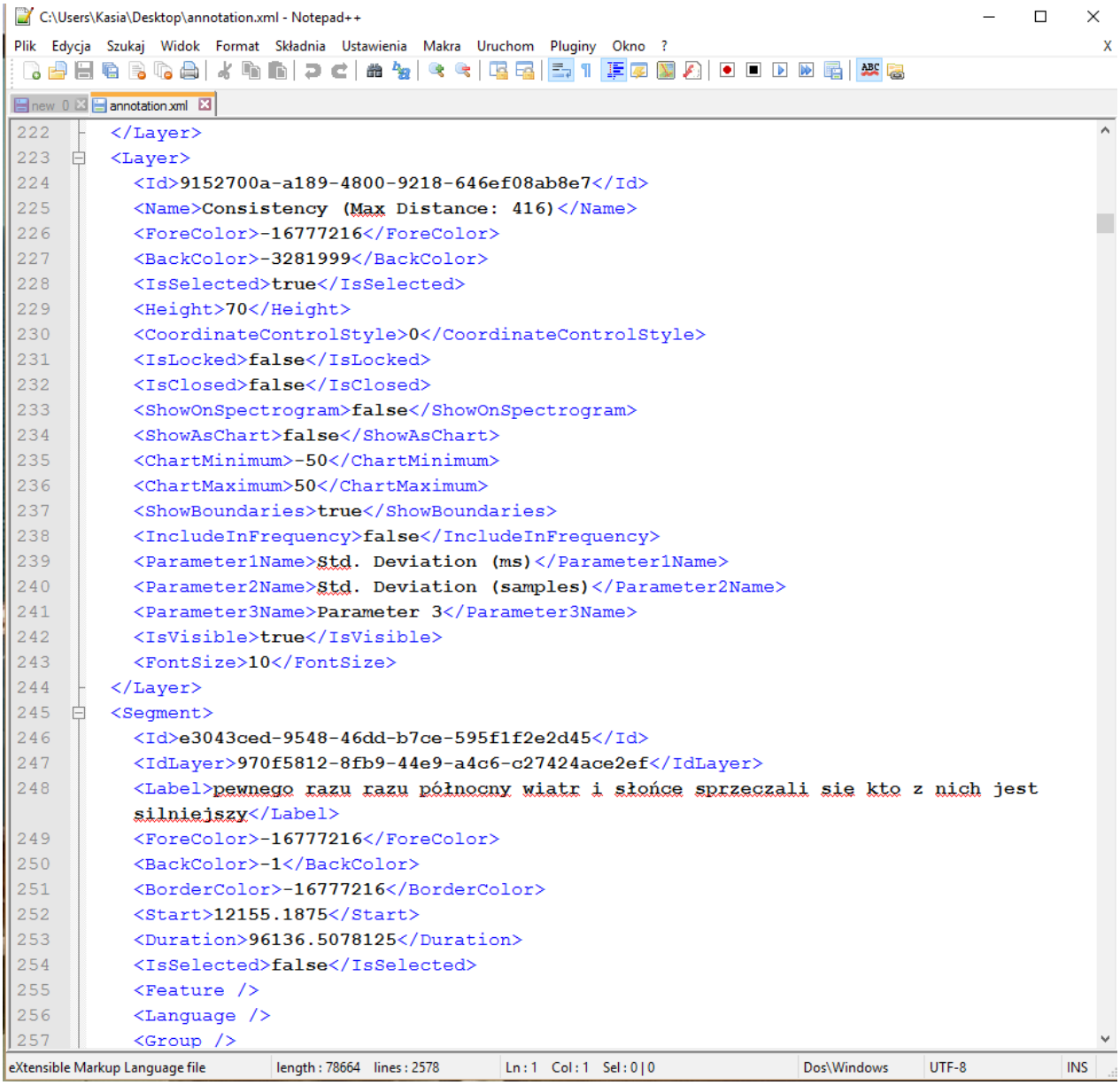


Either white or dark background can be used depending on the setting in Black & White.



Open Annotation XML

Open and display the annotation XML file. The internal annotation data format of Annotation Pro.



File format

<AnnotationSystemDataSet>

Main tag including the annotation data.

<Layer>

Information about annotation layer.

****

Information about annotation segment.

<Audio File>

Information about audio files.

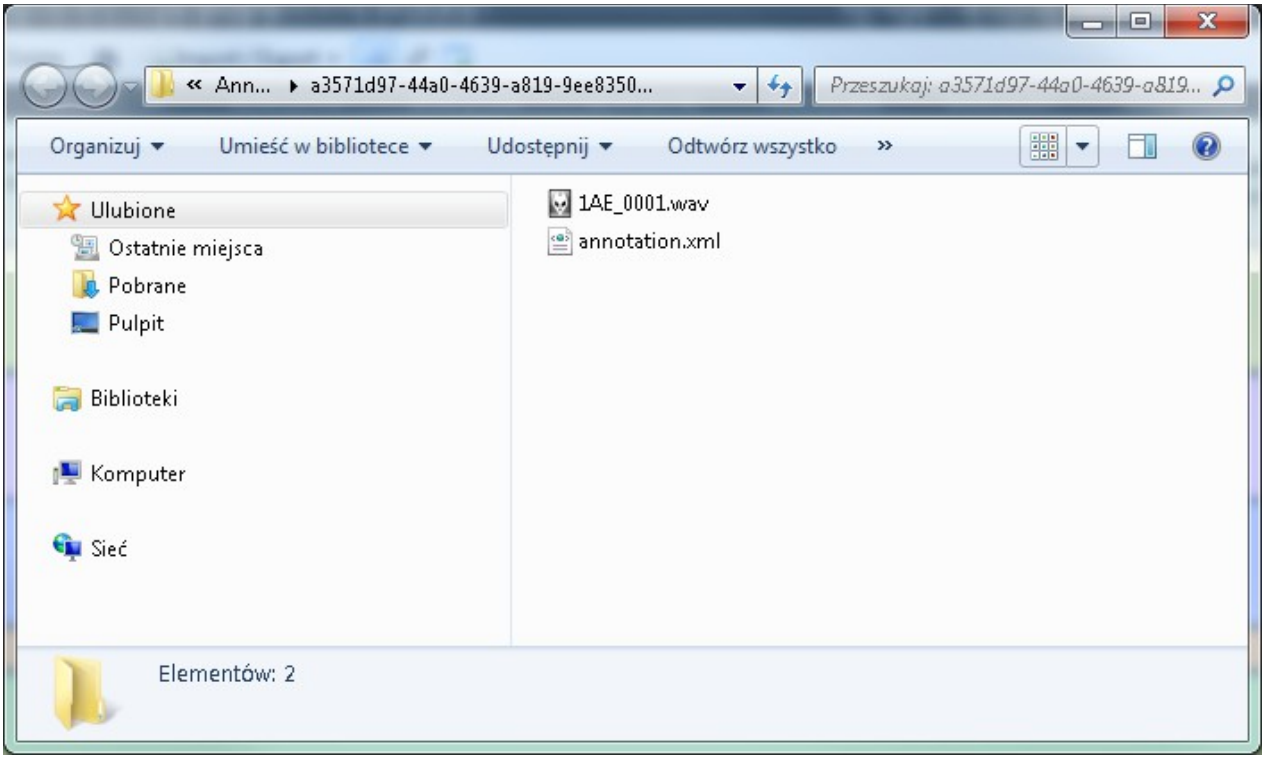
<Configuration>

Parameters, project information, edit date, file version.

More about Annotation Format

Open Data Folder

Open folder containing currently used data, primarily the .xml annotation file. In case when any wave files are embedded in the *.ant file, they will be also available in the Data Folder (see Remember Open Audio Files for more). After saving the *.ant file, the content of the folder is compressed with ZIP.

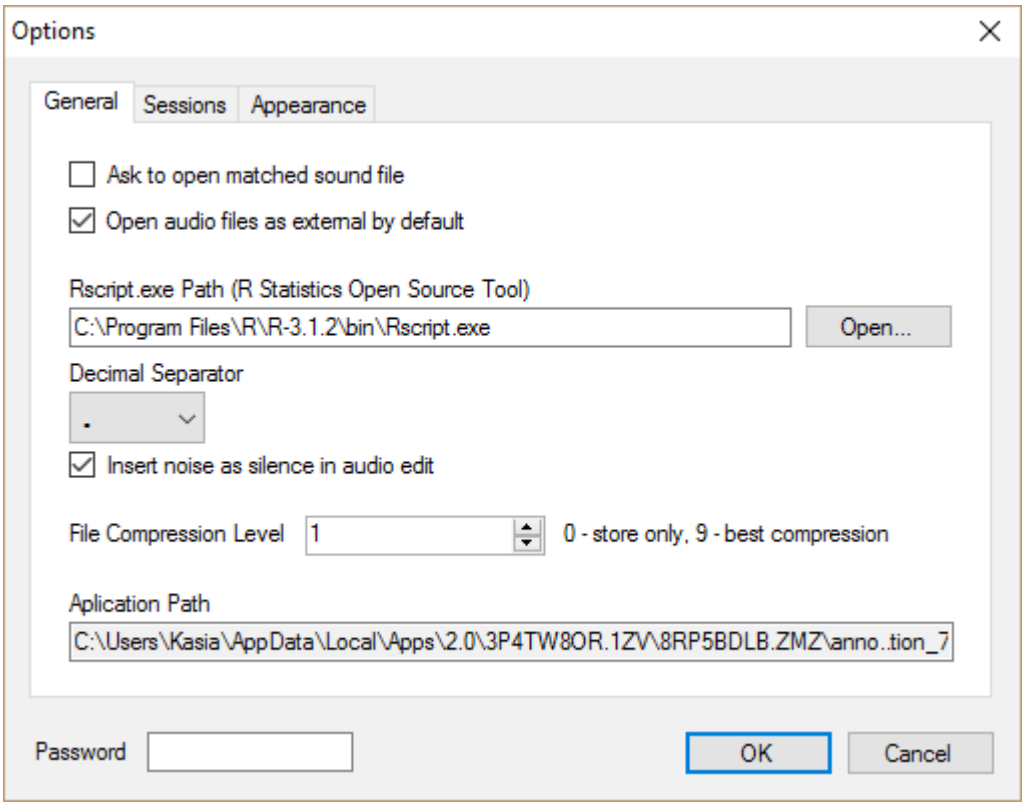


More about Application Folders

Options

Advanced application settings. One of the more important and frequently used is Decimal Separator which needs to be set appropriately to ensure correct data import from spreadsheets or CSV files to annotation layers.

Available options



Ask to open matched sound file

If the annotation file and the corresponding audio file with the same name are located in the same folder, by default they are automatically treated as a pair and opened by the program. If we choose the option 'Ask to open matched sound file', and select to open the annotation, the program displays a dialog window asking whether to open the audio file as well.

Open audio files as external by default

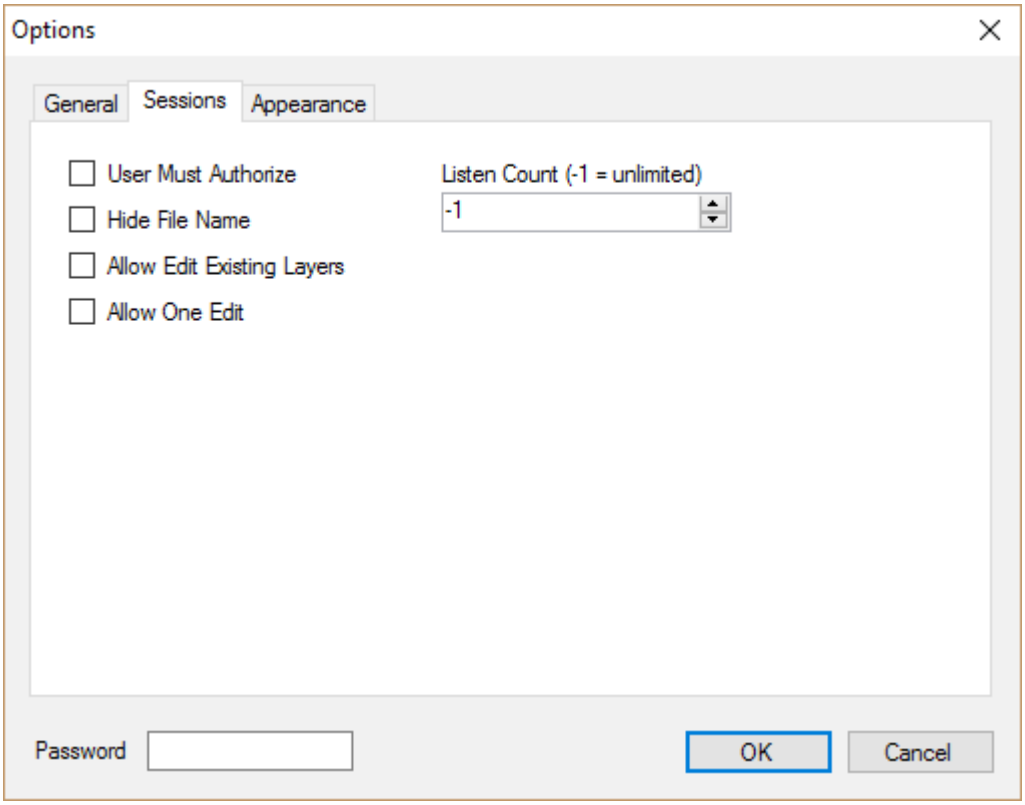
If a new file is added to Audio Files, the program stores only its path. If this option is switched off, after adding a file to Audio Files, it becomes embedded into *.ant file.

Rscript.exe Path

The path to R statistical software package. The software is freely available on the internet. After setting the path it becomes possible for Annotation Pro to use R for plotting the results of statistical analyses.

Decimal Separator

Decimal Separator can be different for operating systems / users from different countries. This may cause problems for data exchange with Import / Export. It may be necessary to adjust the Decimal Separator to match the one used by your collaborators.



Session / User Must Authorize

The user / participant of a perception test must provide their personal data before starting Session Mode

Session / Hide File Name

Anonymize file names while working in Session Mode.

Session / Allow Edit Existing Layers

Enable editing existing layers while working in Session Mode.

Session / Allow One Edit

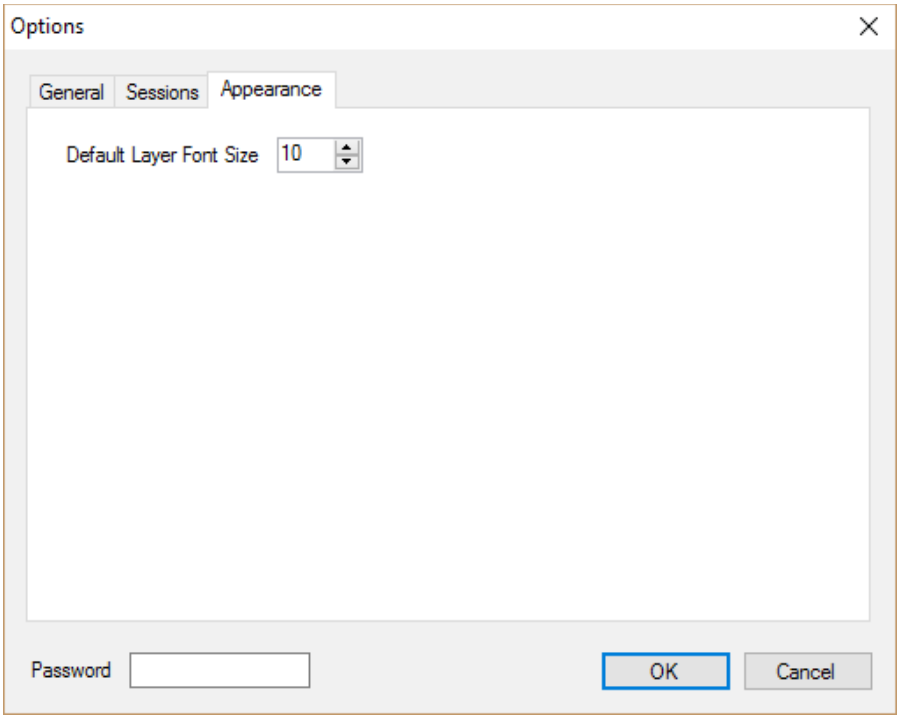
Each file can be opened only once while working in Session Mode.

Session / Listen Count

Define the number of sound playbacks allowed while working in Session Mode.

Password

If a password is set, the settings are only accessible for users knowing the password. Useful when the software is used in public rooms, e.g. for the needs of conducting perception tests or corpora annotation with non-expert users, students etc.



Appearance

Define the font size for text displayed as labels in segments in the annotation layers.

Plugins

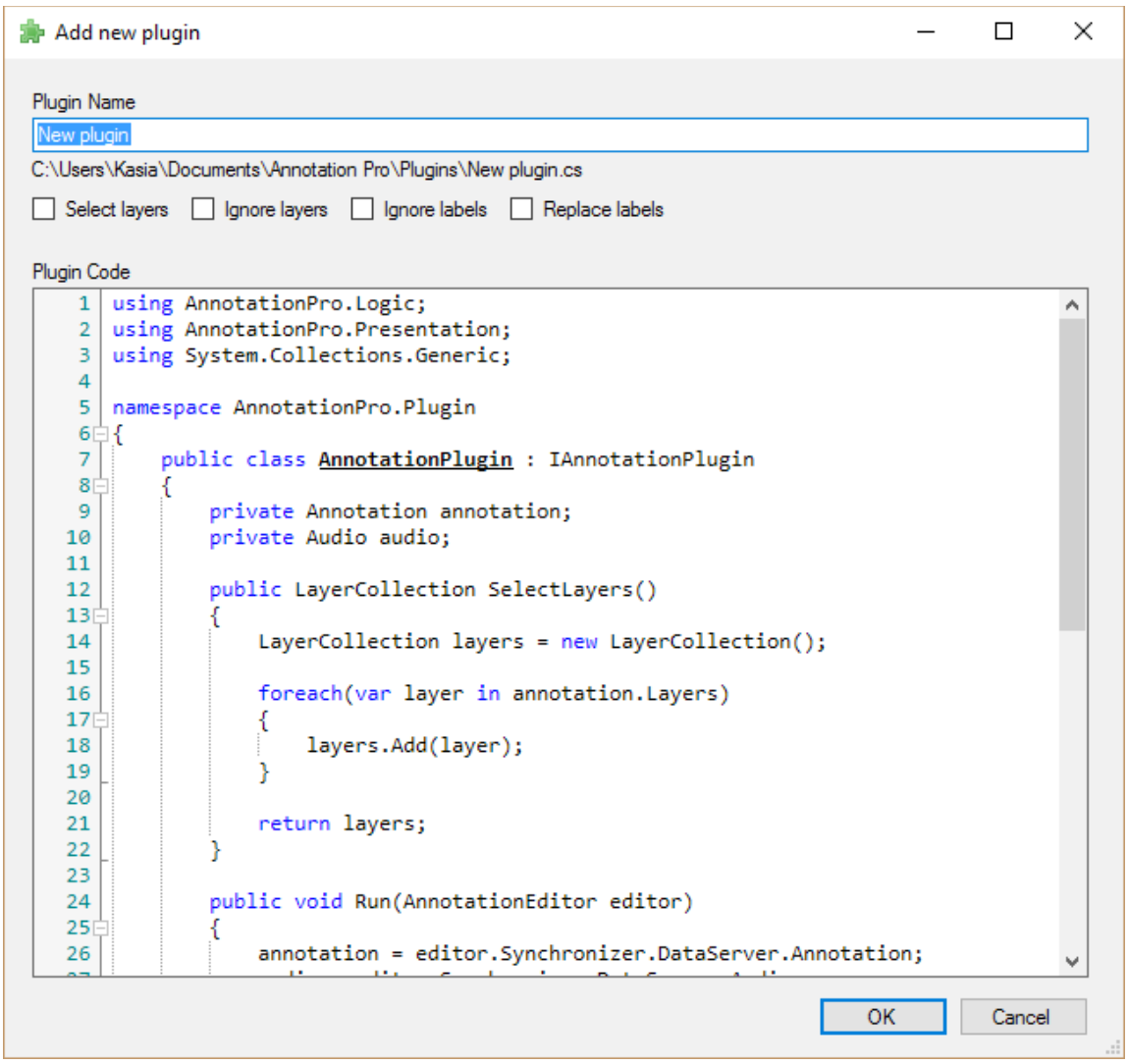
Launching the user's plugins (C# scripts). This menu is dynamically created and updated based on the contents of Plugins Folder including the plugin files. Each file saved to this folder will be automatically added to Plugins Menu.

- Open Plugins Folder
- Workspace Mode
- Refresh
- User Plugins List

More About Plugins
More About Application Folders

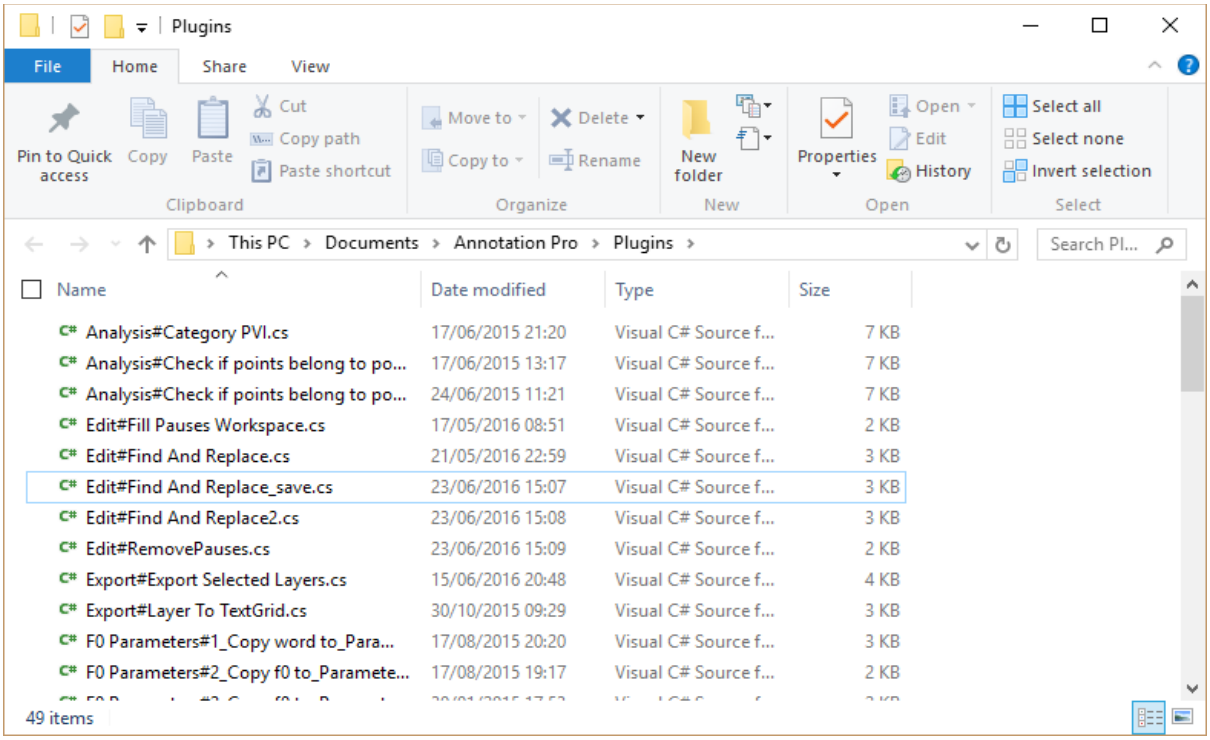
Add New Plugin

A C# template useful for creating user's own plugins. The script includes the basic Annotation Pro plugin structure and can be modified / extended directly in the text field. Several pre-sets are also defined as options that can be used to insert fragments of code into the script: Select layers, Ignore layers, Ignore labels, Replace labels.



Open Plugins Folder

Open the Plugins Folder containing all user's plugins, a quick way to access the plugin files without searching the disk folders to find them.



More About Plugins

More About Application Folders

Workspace Mode

Switch to Workspace Mode. If this option is selected, the plugin will be executed for all files selected from the Workspace.

More About Plugins

More About Workspace Panel

Refresh

Refresh User Plugins List by checking the contents of Plugins Folder.

More About Plugins

More About Application Folders

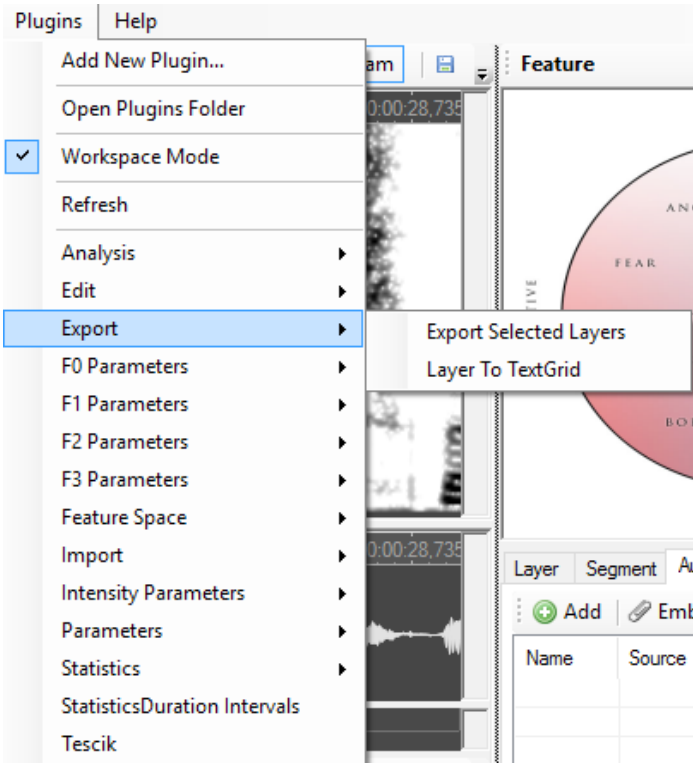
User Plugins List

List of commands created dynamically at program's launch based on the names of the plugins in the Plugins Folder (see also: Open Plugins Folder) or after clicking the Refresh option in Application Menu / Plugins. A separate command will be created in the Menu for each file from Plugins Folder.

Grouping plugin commands

When the number of your plugins becomes too high and it is not comfortable anymore to display them as one long list, you can group them in the Plugins menu.

The character # in the name of your plugin indicates dividing the name of the group from the name of the specific plugin. The part of the name to the left from # is the group name (see e.g., the Export plugin group in the example below). The group will be automatically created in the menu when you start the application.



More About Plugins

More About Folders

Help

Help files, index and general information about the program.

- Contents
- Index

- Search
- About

User Manual

Open User Manual.

User Manual PDF

Open User Manual PDF in an external program.

Quick Start PDF

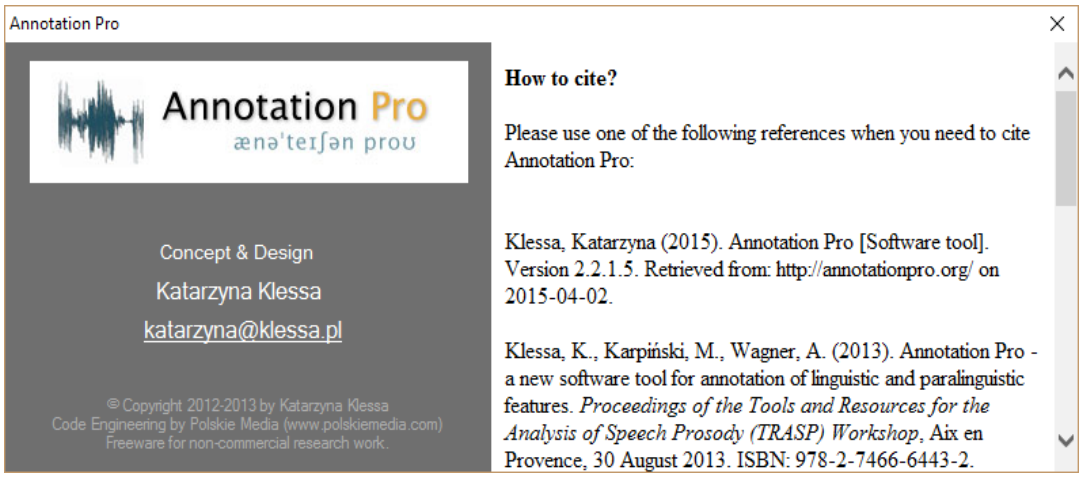
Open the Quick Start PDF file in an external program. The Quick Start is a short tutorial for beginners providing answers to the most basic 'How to' questions for Annotation Pro. Also available online from the Annotation Pro Website: Quick Start.

Annotation Pro Website

Open Annotation Pro website (annotationpro.org).

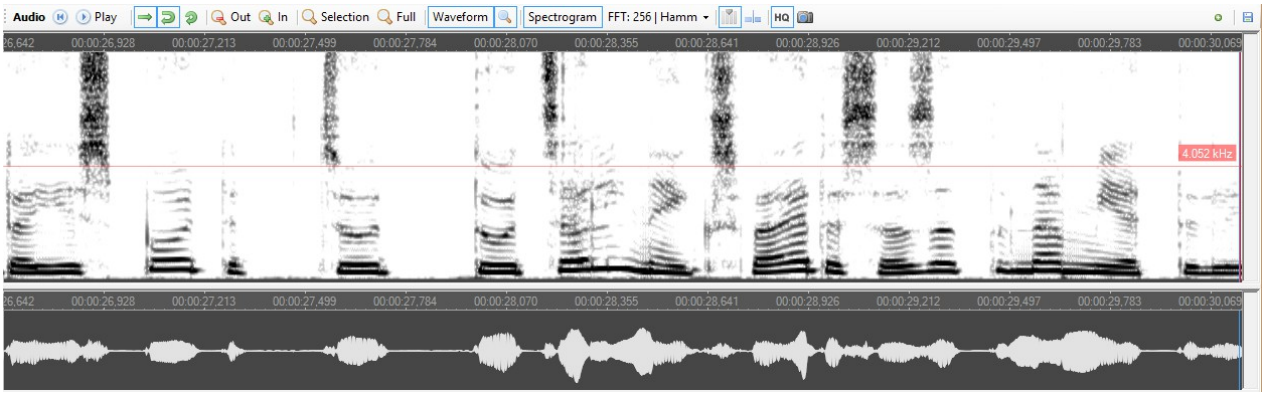
About

Display information about the program's version, author, collaborators and citing request.



Audio Panel

Audio Panel is used for sound signal display and for playing the sound. It includes Audio Toolbar, Spectrogram, and Waveform. Audio Toolbar (top bar) contains buttons for the most important tasks related to the sound. Spectrogram (middle) can be treated as a three-dimensional sound signal representation (frequency, intensity, and time), very useful as a basis of manual speech signal annotation. Waveform (bottom) - a two dimensional sound representation (intensity and time).



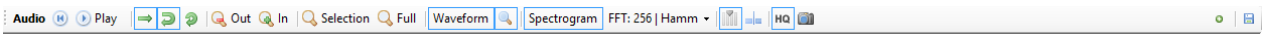
More About Audio Toolbar

More About Spectrogram

More About Waveform

Audio Toolbar

Toolbar for Audio Panel. Audio Panel. Includes the most frequently used buttons related to audio.



Buttons Description

Go To Start

Move the cursor back to the beginning of the file. More

Play / Stop

Play sound. More

Follow Cursor

If selected, the program window follows cursor during sound playing. More

Auto Rewind

Move the cursor back to the initial position after playing the sound for the whole file or a selected fragment. More

Loop Audio

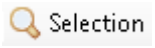
Repeat sound playback until stopped by the user. More

Zoom Out

Zoom out the visible audio display (horizontal zoom). More

Zoom In

Zoom in the visible audio display (horizontal zoom). More

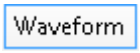


Show Selection

Set zoom exactly to display the selected fragment of the audio. More

Show Full

Set zoom to display the whole audio file. More

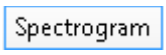


Show Waveform

Turn on/off the Waveform display. More

Magnify

Magnify the Waveform display (useful for visual inspection of lower quality, lower intensity signal). More



Show Spectrogram

Turn on/off the Spectrogram display. More

Spectrogram Settings

Spectrogram Settings. Adjust Fast Fourier Transform parameters and select algorithms used for creating the Spectrogram. More

Boundaries

Turn on/off segment boundary display over the Spectrogram and Waveform. More

Make Screenshot

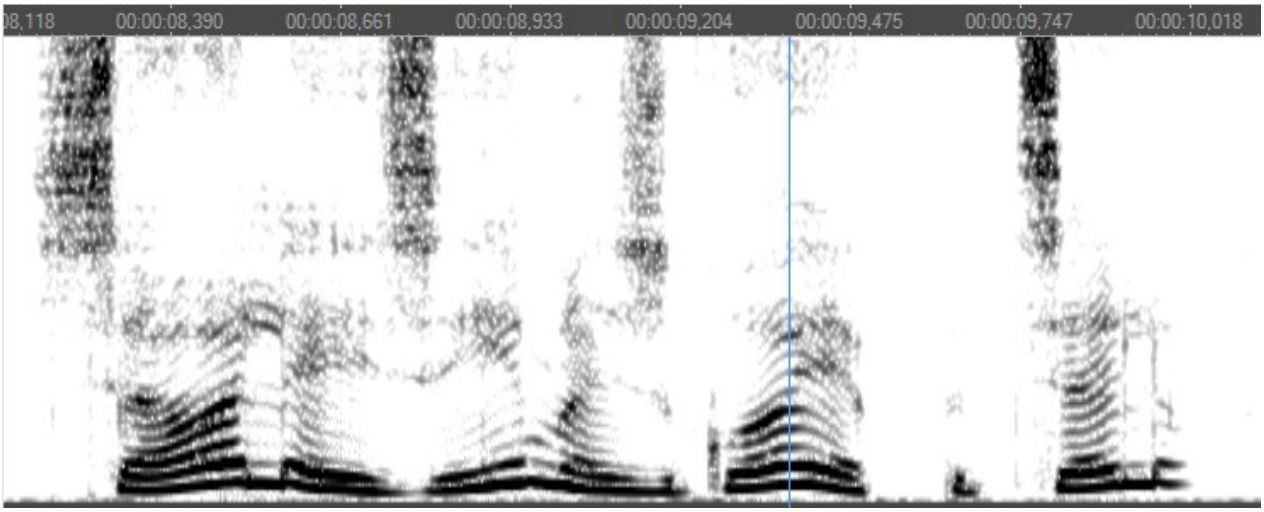
Create a screenshot for Spectrogram and Waveform. Copy the screenshot to Windows clipboard enabling quick and easy usage of the speech signal representation e.g., by pasting it into a text editor document.

Auto Save Open Audio

Add the path of the last open file to Audio Files that are saved to *.ant file together with the annotation. More

Spectrogram

The spectrogram is one of the fundamental visual representations of signal used for various types of speech analyses. Spectrogram represents the spectrum of frequencies. Among others, it makes it possible to analyze the variability of intensity and frequency of sound signal over time. The horizontal axis of the spectrogram corresponds to time, and the vertical axis shows frequency values. The darker the areas in the spectrogram, the higher its intensity. spectrogram belongs to Audio Panel. It can be turned on / off with the Spectrogram button on Audio Toolbar.



Zoom

Zoom can be changed with the buttons on Audio Toolbar or with the mouse scroll. You can adjust the zoom to see either the minute details (In), larger fragments of the audio (Out) or the whole file at one screen (Full).

Selection

A fragment of audio can be selected using left mouse button and dragging mouse. The fragment becomes highlighted in blue. The Audio Cursor will be set to the end of selection.

View Window Moving

Grab the ruler above the spectrogram and move to the left or right in order to move window towards the fragment of audio which we want to see. See also: Waveform Navigator.

Audio Cursor

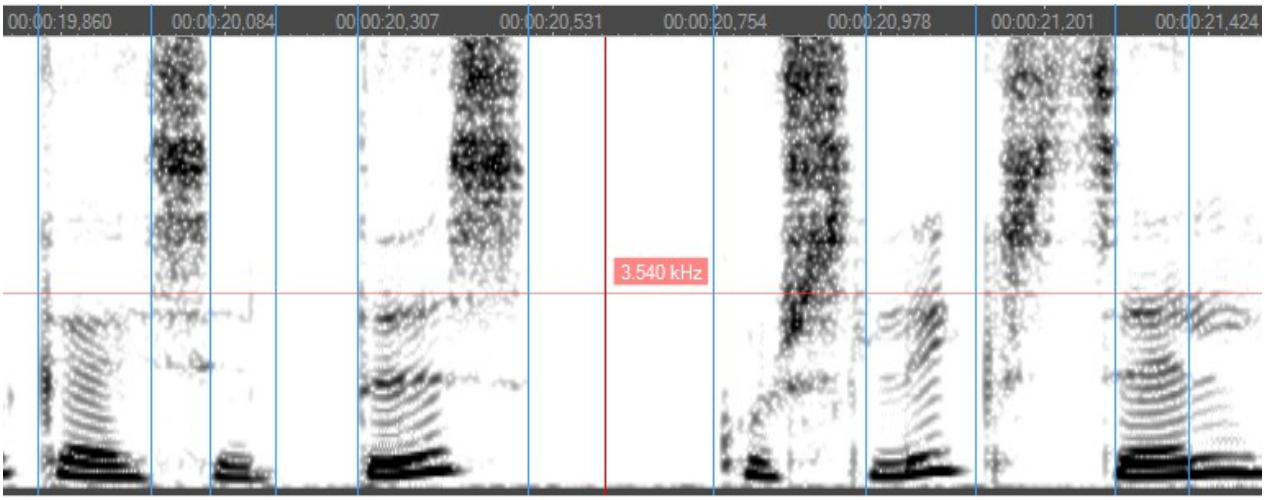
Spectrogram also shows the location of the Audio Cursor in the form of a vertical blue line. Cursor indicates position during sound playing and is used for editing annotations. To change the Audio Cursor position just click the place to which you want to move it.

Mouse Cursor

When we move the mouse over the Spectrogram, we can see a red vertical line indicating the exact location of the Mouse Cursor.

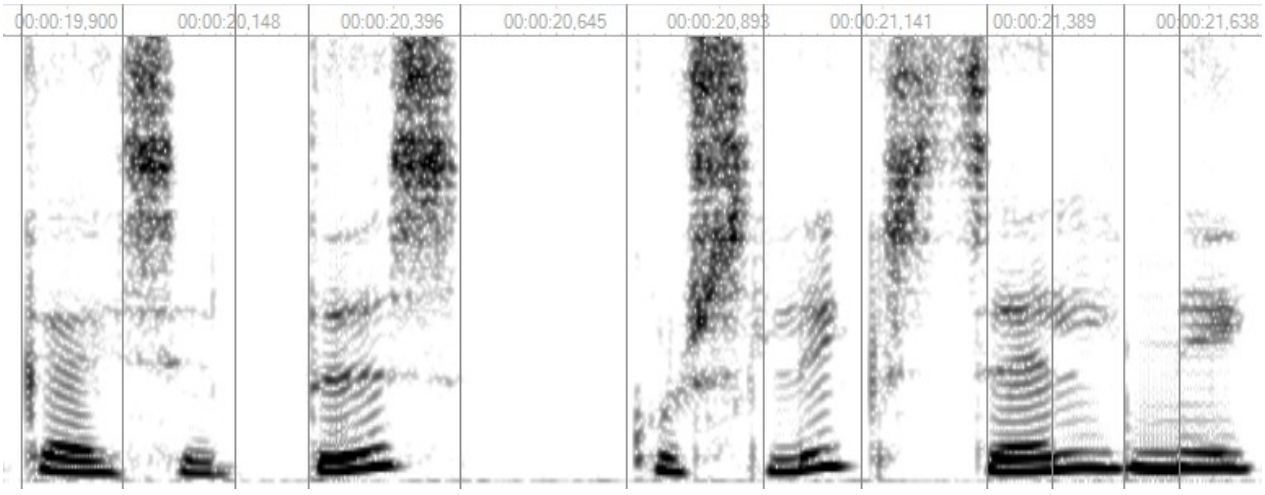
Boundaries

Thin blue lines over the Spectrogram and Waveform corresponding to annotation segment boundaries. Useful for editing annotations and for manual inspection of segmentation. Boundaries can be turned on / off with Boundaries on the Audio Toolbar or Application Menu / Tools.



Black & White

Switch to black and white window display. The rulers are turned to white, and the spectrogram has lighter colors which may be useful for printing purposes.



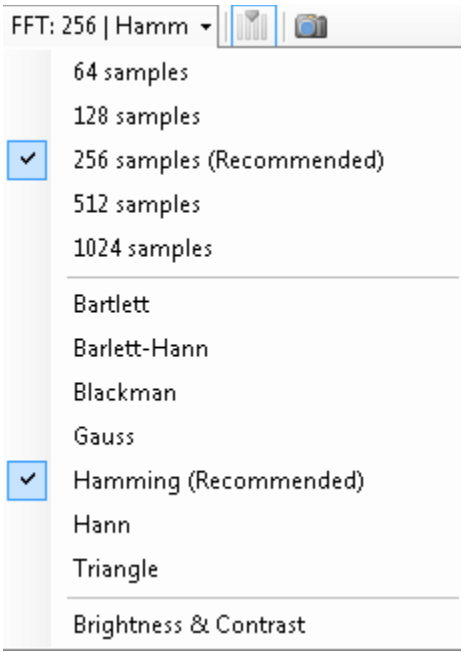
Spectrogram algorithm

The spectrogram in Annotation Pro is created with FFT (Fast Fourier Transform) algorithm that results in a representation in the form of vertical bars appearing distances differing by a specific number of samples. First, a window is taken, i.e. the number of

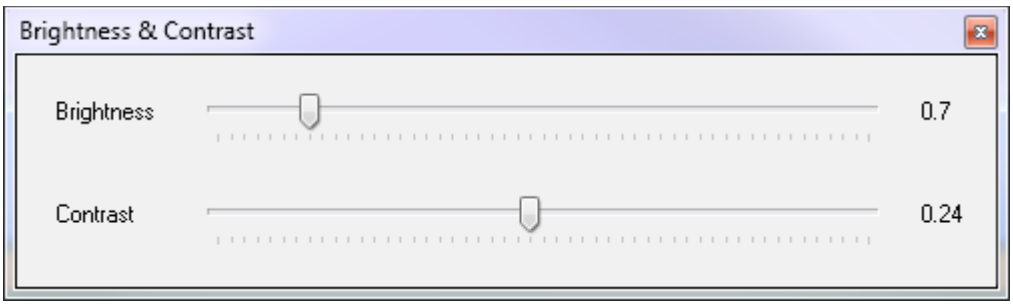
samples. This number is multiplied by a window function in order to smooth the data on the window's borders. Different types of windows can be used depending on the needs. The so called Hamming and Blackman windows (named from the names of their authors) are ones of the frequently used for speech analysis. Hamming and Blackman (as well as several others) are functions that are used for smoothing values. Such data are then processed with FFT. The window width corresponds to the number of samples taken from audio data to plot a single bar. The greater the number of samples vertically, the higher the resolution vertically (frequency representation). It can be adjusted depending on the needs, signal specificity etc. Due to FFT requirements, the basic window width must always be a power of 2, i.e. 2, 4, 8, 16, 24, 32, 64, 128, 256, 512, 1024...

Spectrogram parameters

Spectrogram parameters can be modified on Audio Toolbar. The user can choose the window width (samples) and the type of window smoothing (Hamming, Hann, Blackman...). Usually the adjustments are done experimentally with a view to obtain the best visual representation for particular recordings.



Additionally, it is possible to set Brightnes & Contrast according to the user's preferences.

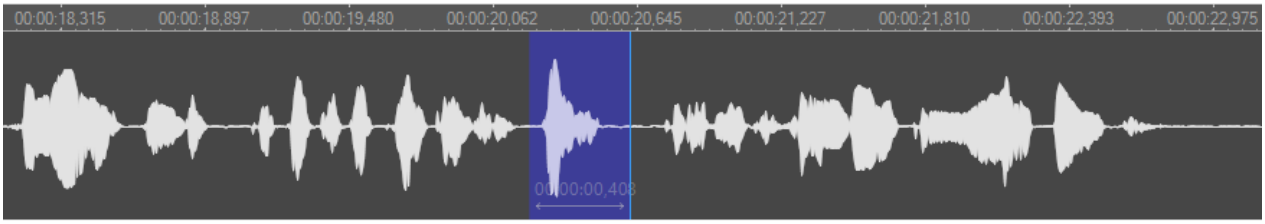


More About Audio Panel

More About Audio Toolbar

Waveform

Waveform is one of the most popular visual representations of audio signals. It is a curve showing each sample of an audio signal at a given time as points on a screen. Waveform belongs to Audio Panel. It can be switched on with the Waveform button in Audio Toolbar.



Zoom

Zoom can be changed with Audio Toolbar or mouse scroll. You can adjust the zoom to see either the minute details (In), larger fragments of the audio (Out) or the whole file at one screen (Full).

Selection

A fragment of audio can be selected using left mouse button and dragging mouse. The fragment becomes highlighted in blue. The Audio Cursor will be set to the end of selection.

View Window Moving

Grab the ruler above the spectrogram and move to the left or right in order to move window towards the fragment of audio which we want to see. See also: Waveform Navigator.

Audio Cursor

Waveform also shows the location of the Audio Cursor in the form of a vertical blue line. Cursor indicates position during sound playing and is used for editing annotations. To change the Audio Cursor position just click the place to which you want to move it.

Mouse Cursor

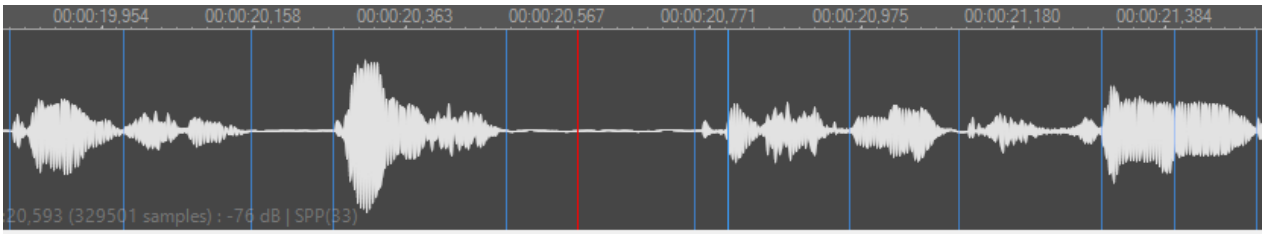
When we move the mouse over the Waveform, we can see a red vertical line indicating the exact location of the Mouse Cursor.

Magnify

It is possible to magnify the Waveform representation vertically. Use Magnify on Audio Toolbar or Application Menu / Tools. Useful for visual inspection of recordings characterized by low intensity, weak signal, lower quality.

Boundaries

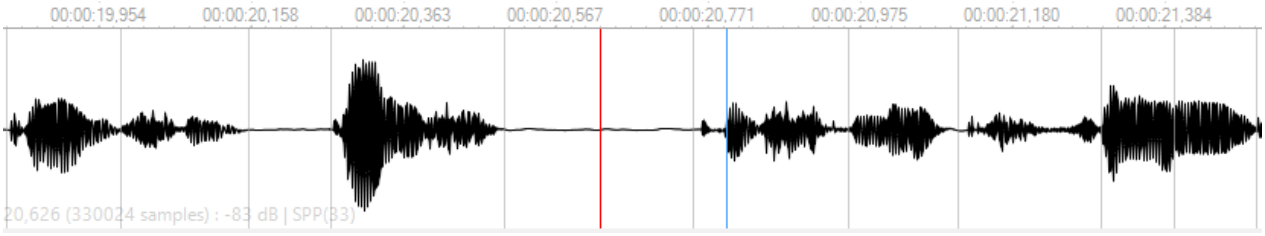
Thin blue lines over the Spectrogram and Waveform corresponding to annotation segment boundaries. Useful for editing annotations and for manual inspection of segmentation. Boundaries can be turned on / off with Boundaries on the Audio Toolbar or Application Menu / Tools.



Black & White

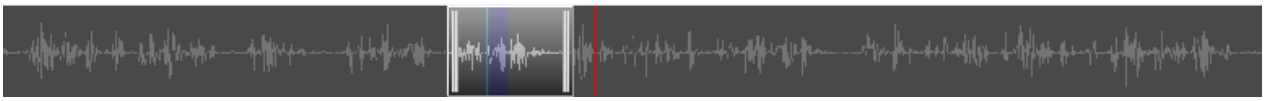
Switch to black and white window display. The rulers are turned to white, and the spectrogram has lighter colors which may be useful for printing purposes.

Waveform



Waveform Navigator

A special navigator control, additionally showing the shape of the waveform. It always show the waveform for the whole audio file. In case when a part of the audio is selected (highlighted), the highlight is also visible on this control, as well as the positions of Audio Cursor and Mouse Cursor. It is not possible to change the highlight position or Audio Cursor position on this control. The navigator shows a View Window, a special window showing the part of the audio currently visible on the screen. View Window can be moved by dragging with the mouse. It can also be resized by grabbing the borders. This is an additional way of changing Zoom in the application.



Zoom

Grab the border of View Window and drag it to adjust the window to show the fragment of the audio according to the needs. Mouse scroll can also be used to zoom in/out which is probably the fastest way of adjusting Zoom.

View Window Moving

Grab View Window and drag it to the left or right to display the fragment of the audio according to the needs.

Annotation Panel

Annotation edition panel. The central working panel of Annotation Pro composed of Annotation Toolbar and Annotation Layers.

[More about Annotation Toolbar]

[More About Annotation Layers]

Annotation Toolbar

Most important commands for annotation tasks.

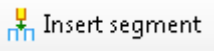
Buttons Description

Add New Layer

Add new annotation layer. More

Duplicate Layer

Create a duplicate of the selected layer together with all its segments. More

 **Insert Segment**

Insert new segment into the selected layer. More

Split Segment

Split the selected segment in two parts at Audio Cursor location. More

Consolidate Segments

Consolidate selected segments into one. More

Auto Resize Segments

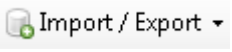
Resize selected segment to its right neighbor (fill gaps between segments). More

Delete

Remove selected segments or layers. More

Find & Replace

Open Find & Replace dialog. More

 **Import / Export**

Import and Export menu. More

Snap To Segments

If selected, the segments are snapped to neighboring segments during edition. More

Stick To neighbors

If selected, the boundaries of two directly neighboring segments are treated as one common boundary (like one boundary marker) and can be moved together. More

Auto Selection

Automatically select audio for the selected fragment of annotation. More

Auto Edit Mode

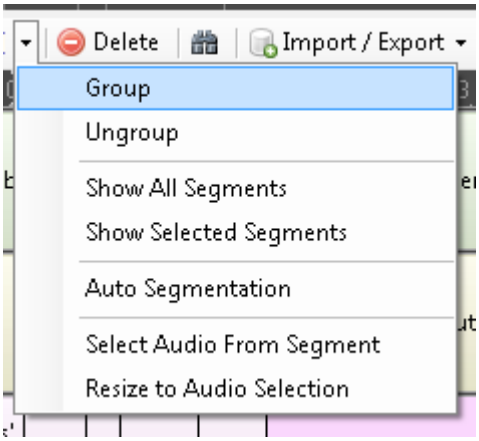
Auto Edit Mode. More

Segment List

List of all segments in the selected annotation layer. Each segment is represented as one row of the table. More

More Menu

Right next to Auto Resize Segments there is one more small menu with additional segment operations.



Group

Group selected segments. More

Ungroup

Ungroup selected segments. More

Show All Segments

Change (horizontal) Zoom to display all segments. More

Show Selected Segments

Change (horizontal) Zoom to display all selected segments. More

Auto Segmentation

Automatic segmentation. More

Select Audio From Segment

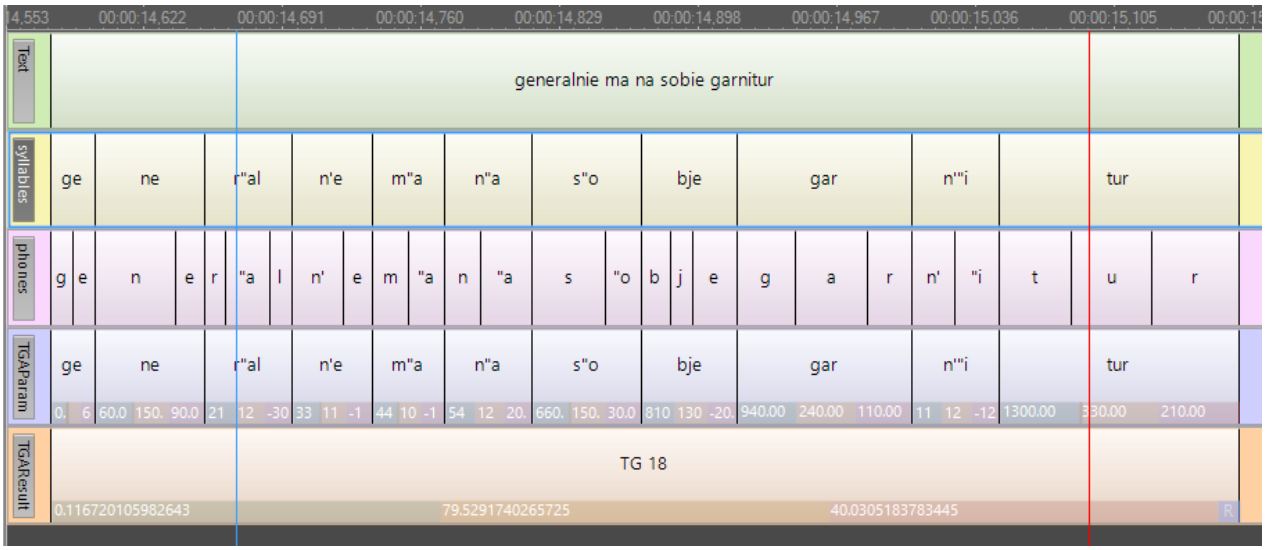
Select audio for the selected segment. More

Resize To Audio Selection

Resized the selected segment so that it corresponds (becomes time-aligned) to audio selection. More

Annotation Layers

Annotation Layers. The main control of the application. The layers are tiled in rows. Layers can include segments. Many parameters of layers and segments can be adjusted in Layer Properties and Segment Properties, as well as Properties Panel.

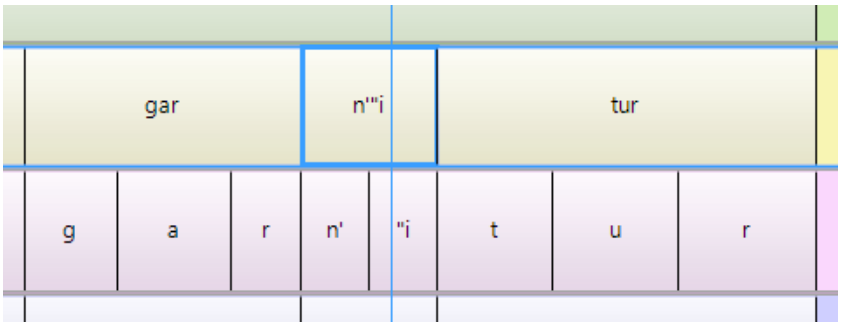


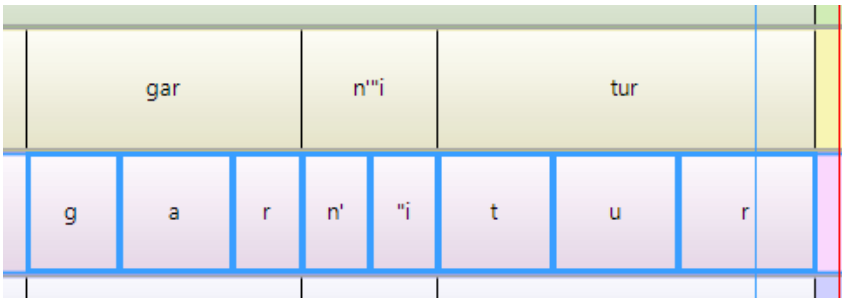
Zoom

Zoom can be changed in several ways, one of them is to use mouse scroll. You need to click on the annotation and use the scroll to zoom in / out and see smaller or larger fragment of the annotations around the cursor.

Selection

Use left mouse button to select segments or layers. By clicking on a segment we select it. A blue frame is displayed around a selected segment. If you use click and press **Ctrl**, you can select several items. If you select and keep **Shift** key pressed, you also select segments in between the first and last one that are selected.



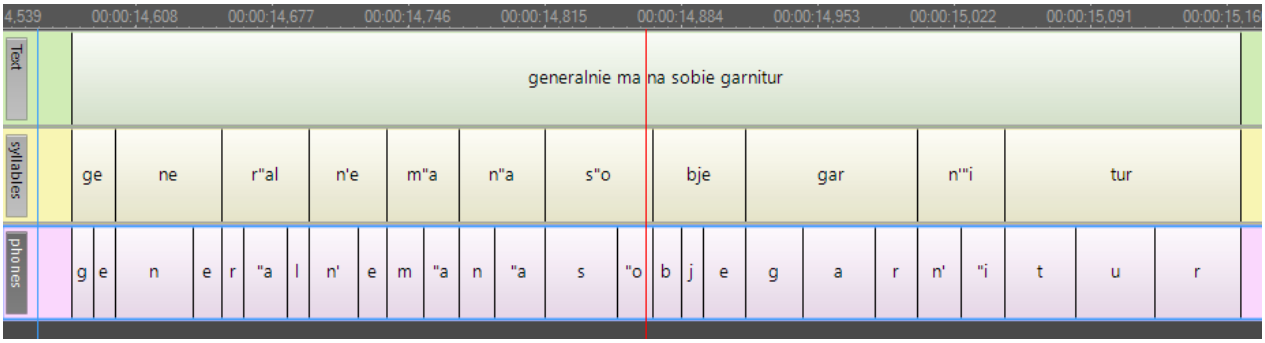


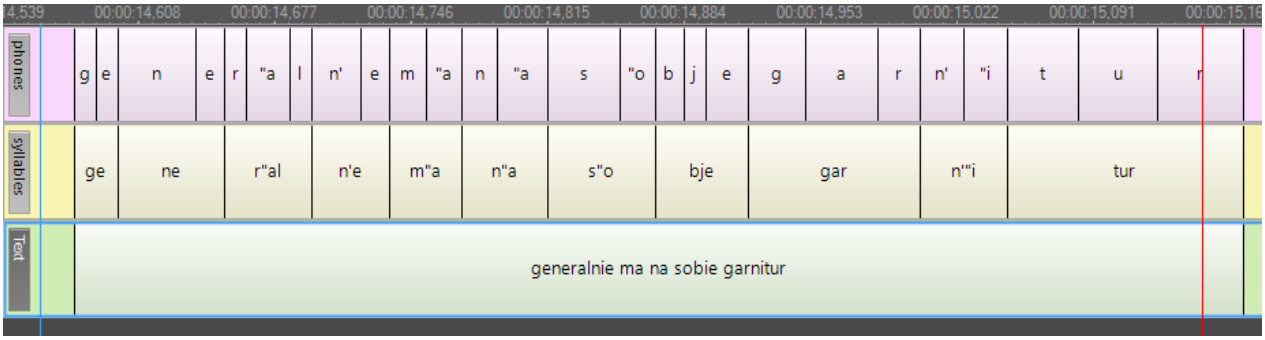
View Window Moving

Grab the ruler above the annotation layers and move to the left or right in order to move window towards the fragment of annotation which we want to see

Reordering Layers

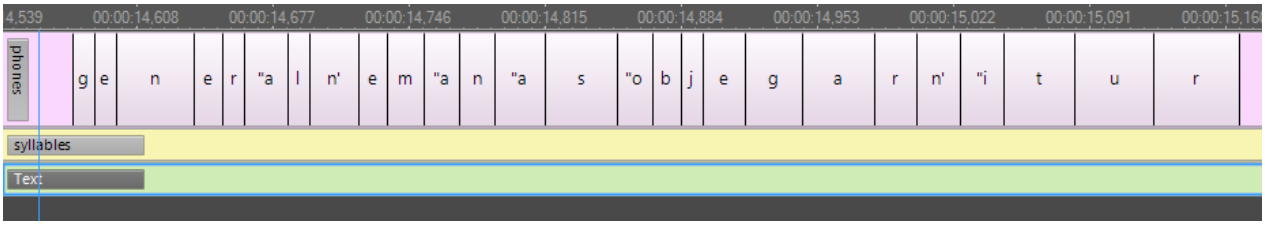
Grab Layer Name and drag it up or down to re-order multiple layers.





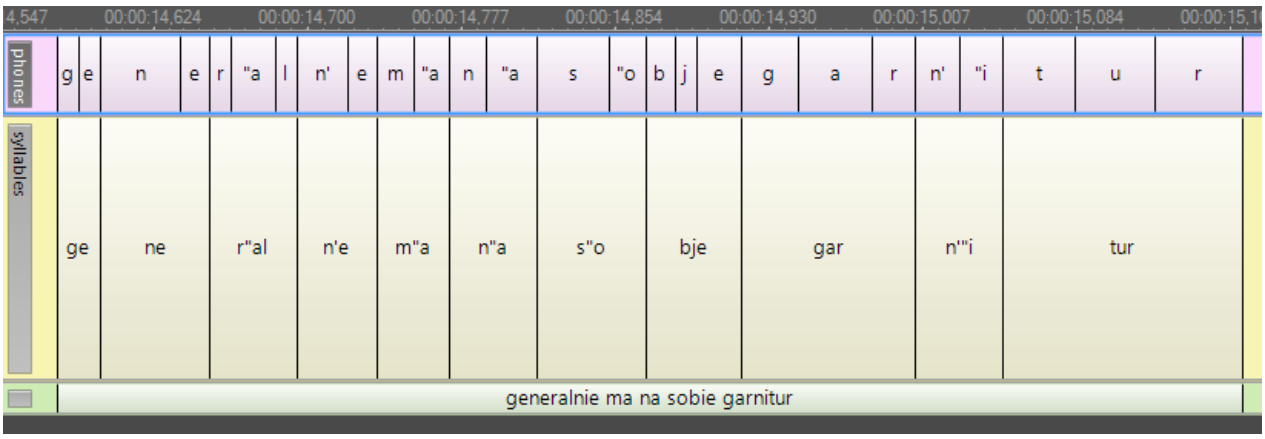
Closing Layers

Double-click layer name to close it. A closed layer becomes narrow, no segments are visible. Useful when you need to save space in case of multiple layer annotations but you can still see the layers' names.



Resizing Layers

Resize layer height by grabbing its border and dragging it up or down.



Moving Segments

Move segments by grabbing it with the mouse and dragging to another position. It is possible to move segments both within the same layer or to a different layer.

Resizing Segments

Resize segments by clicking on the segment boundary and dragging it to the left or right with the mouse. If the option Snap To Segment is on, boundaries are snapped to the nearest neighbors while dragging (to fill pauses). If the option Stick To neighbors is on, then two directly neighboring boundaries are sticked treated as one common boundary.

Audio Cursor

The annotation panel also shows the location of the Audio Cursor in the form of a vertical blue line. Cursor indicates position during sound playing and is used for editing annotations. To change the Audio Cursor position just click the place to which you want to move it. By default, when a new segment it is inserted, it is inserted at cursor position.

Mouse Cursor

A red vertical line indicating the exact location of the Mouse Cursor.

More About Properties Panel

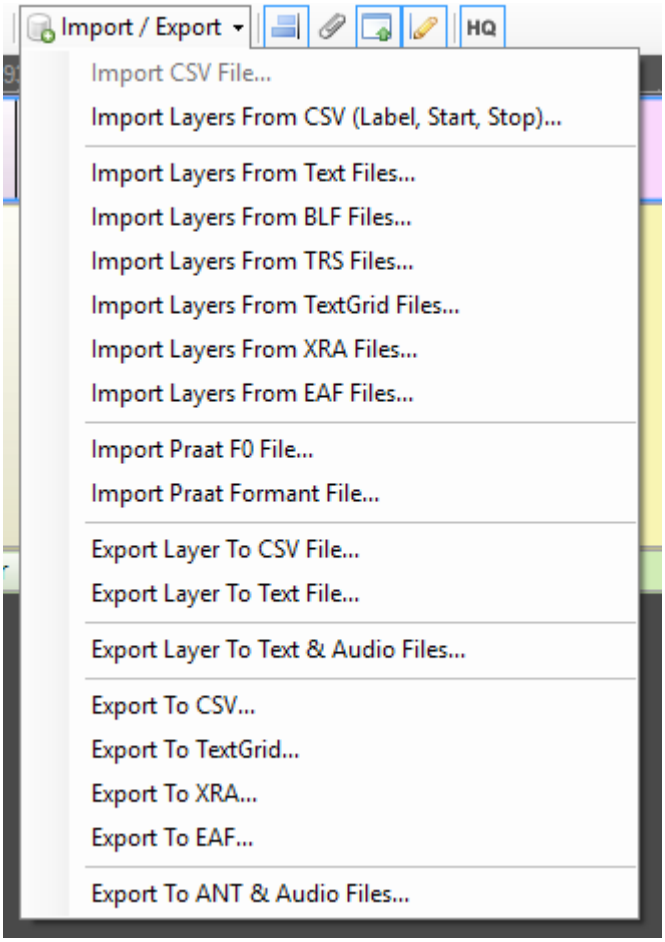
More About Properties

More About Properties

Import / Export

Import / Export menu includes commands for importing / exporting data to / from a range of other formats / applications.

IMPORTANT NOTICE! For some Import / Export formats it is important to check the format of Decimal Separator. It can be modified in Application Menu / Tools / Options. Decimal Separator should be the same in Annotation Pro as in the imported files.



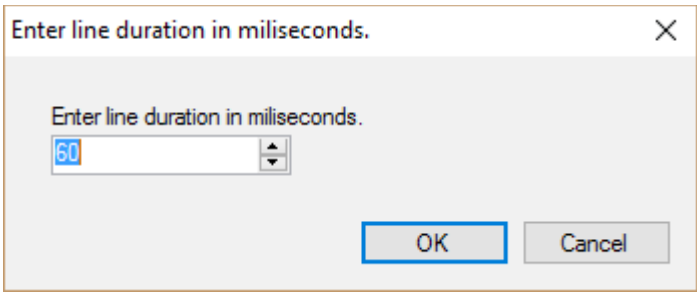
Available Operations

Import Layers From CSV (Label, Start, Stop)

Import layer from a CSV file. You can obtain a CSV by exporting a CSV file from a spreadsheet in a Text Editor (e.g., Excel or Open Office Calc). The CSV file should contain 3 columns: Label, Start Time, Stop Time. It should be encoded with UTF-8, and use {Tab} as field separator.

Import Layers From TextFiles

Import layer from a text file. Each row (line) in the text file will be imported as one segment. The duration of these segments can be set by the user before the import starts. The program will display the following dialog window after the .TXT has been selected for import:



Import Layers From TRS Files

Import from TRS format (Transcriber software).

Import Layers From TextGrid Files

Import from TextGrid format (Praat software).

Import Layers From XRA Files

Import from XRA format (SPPAS automatic annotation tool).

Import Layers From EAF Files

Import from EAF format (ELAN software).

Import Praat F0 File

Import Praat f0 listing file (the first column representing time in seconds, followed by a column representing f0, separated with spaces).

Import Praat Formant File

Import Praat formant listing file (the first column representing time in seconds, followed by four columns representing four formant frequencies, separated with spaces).

Export Layer To CSV File

Export selected layer to a CSV file (the layer can be then easily inspected in a spreadsheet - labels, start times, stop times, and segment durations).

Export Layer To Text File

Export selected layer to a TXT file.

Export Layer To Text & Audio Files

Export selected layer to a file collection where for each segment a pair of files is created: TXT file + WAV file. An easy and quick method of cutting a longer audio file into smaller parts together with corresponding annotations based on the selected layer.

Export To CSV

Export all layers to one CSV. Each segment is exported as one row.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	File	FilePart1	FilePart2	FilePart3	Layer	Start	StartInMiliseconds	Duration	DurationInMiliseconds	Param1	Param2	Param3	Label
2	AB_f_read.ant	AB	f	read	Phrase	68837	4302	20312	1269				Zimels i Saule
3	AB_f_read.ant	AB	f	read	Word	68837	4302	10392	649				zimelz
4	AB_f_read.ant	AB	f	read	Syllable	68837	4302	5068	316				zi
5	AB_f_read.ant	AB	f	read	Syllable	73906	4619	5323	332				melz
6	AB_f_read.ant	AB	f	read	Phone	73906	4619	1393	87				m
7	AB_f_read.ant	AB	f	read	Phone	75300	4706	1209	75				e
8	AB_f_read.ant	AB	f	read	Phone	76510	4781	368	23				l
9	AB_f_read.ant	AB	f	read	Phone	76878	4804	2351	146				z

As can be seen above, the exported file contains the following columns (tab separated):

File – full name of the annotation file
FilePart1 – the first part of the annotation file name
FilePart2 – the second part of the annotation file name
FilePart3 – the third part of the annotation file name

> NOTE: in Annotation Pro, you may encode some of the important information from the point of view of further processing or annotation mining as three parts of your file names. The result will be to export the information to three separate columns in the CSV file. For this, you need to create file names using an underscore (_) to separate the respective parts. For example, if you want to use the information about the ID of the speaker, his/her gender, and speaking style as factors in your analysis you can name your file names e.g., like this: AB_f_read.ant, and as a result you will obtain a speaker ID column (as FilePart1), speaker gender column (FilePart2), and speaking style (FilePart3).

Layer – the name of the annotation layer

Start – segment start timestamp (samples)

StartInMiliseconds - segment start timestamp (milliseconds)

Duration - segment duration timestamp (samples)

DurationInMiliseconds - segment start timestamp (milliseconds)

Param1 – value of Parameter 1

Param2 – value of Parameter 2

Param3 – value of Parameter 2

Label – transcription label

Export To TextGrid

Export all layers to one TextGrid file (Praat).

Export To XRA

Export all layers to one XRA file (SPPAS).

Export To EAF

Export all layers to one EAF file (ELAN).

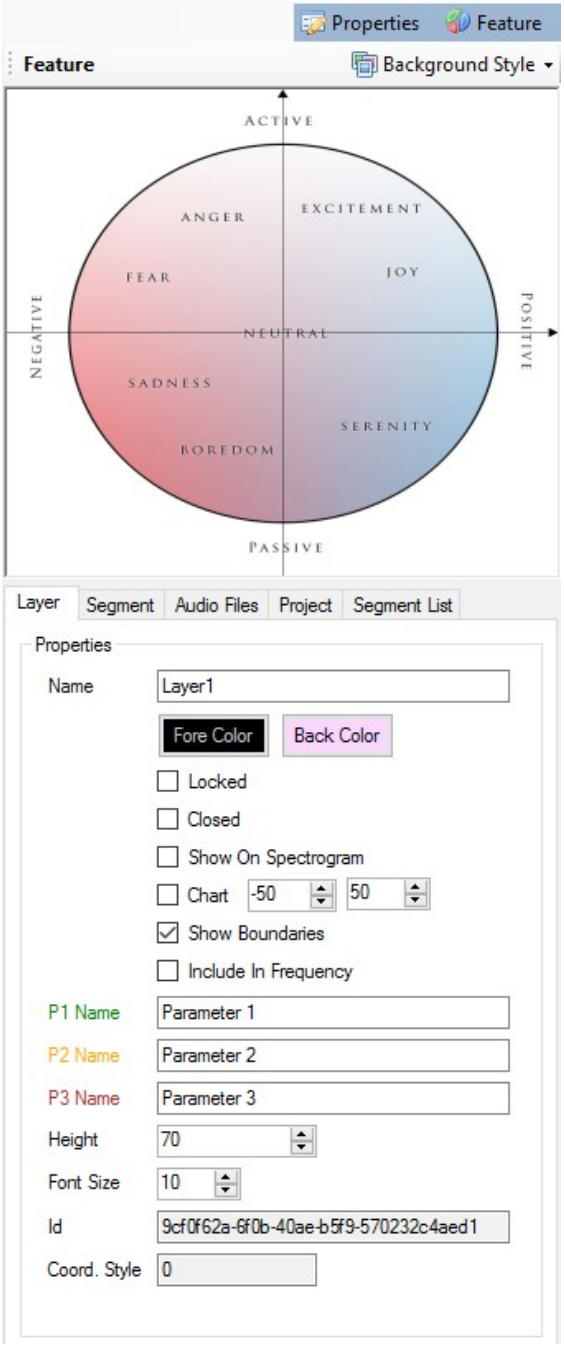
Export To ANT & Audio Files

Export all annotations as pairs of ANT & Audio Files. Pairs of ANT file + WAV file are created. An easy and quick method of cutting a longer audio file into smaller parts based on boundaries in one layer together with corresponding annotations for all layers.

Additional export options are available in Workspace Panel for all workspace (file collections) in Workspace Toolbar / Actions / Export.

Properties Panel

Properties Panel is composed of two parts: (1) Feature Space (upper part) and (2) Properties bookmarks (bottom part). This panel is used for annotation, adding detailed information about layers, segments, audio files, and the whole projects.



Panel Components

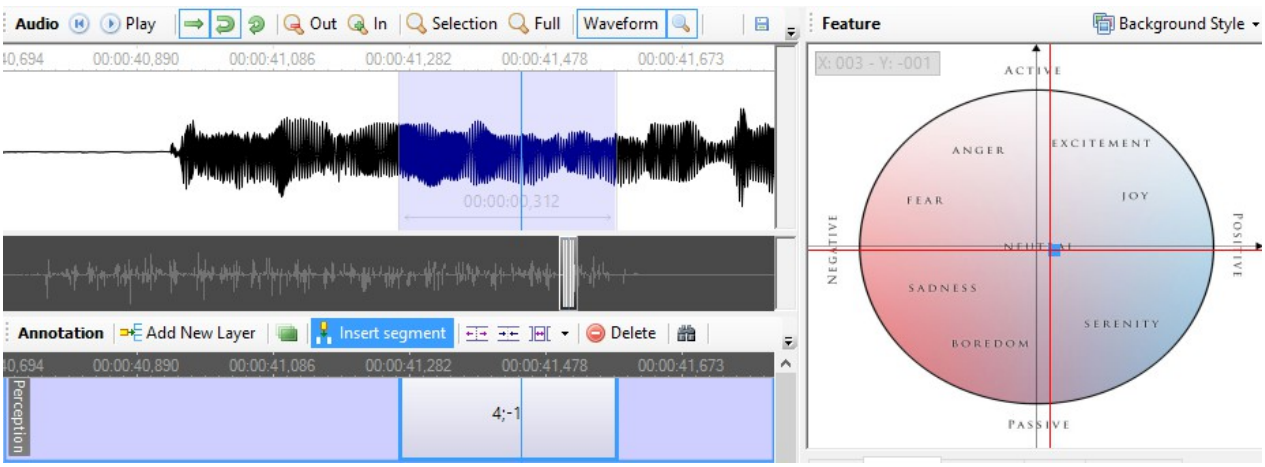
- Graphical Representation of the Feature Space
- Layer Properties
- Segment Properties
- Audio Files
- Project Properties
- Segment List

Graphical Representation of the Feature Space

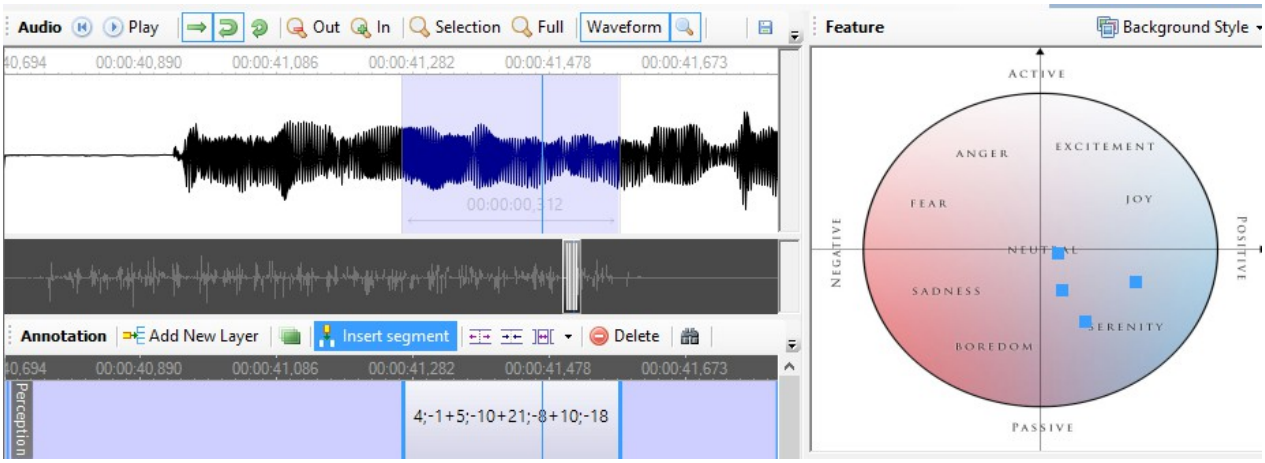
Feature Space is a tool for annotation with the use of continuous rating scales (as well as combination of both continuous and discrete scales). In order to use this functionality you need to go to the Properties panel on the right (Properties button in the top right corner) and switch on the Feature Space panel.

The Feature Space is a graphic control with a Cartesian coordinate system. You can use one of the existing pictures for background feature space representations or add one of your own's.

In the example below, we use an emotion wheel, where black lines with arrows denote the X, Y axes, and the center of the coordinate system is in point (0;0). After clicking on the picture a segment is automatically added on the selected layer with two Cartesian coordinates (here: (4;-1), see also the transcription label for the segment). If a segment was selected before clicking on the graphical representation, its label will be replaced by the coordinates.

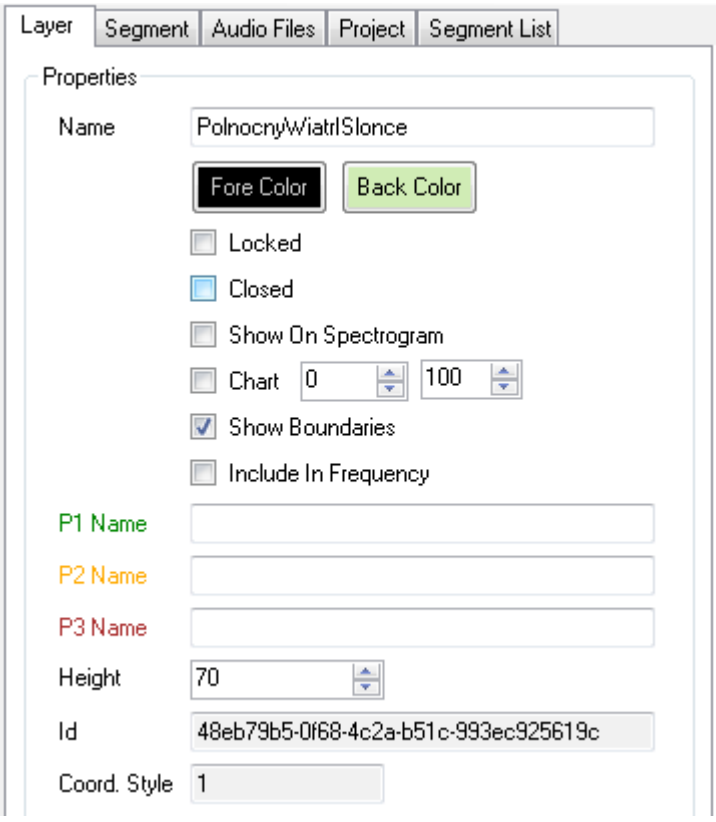


When you click on the picture with the CTRL key pressed, you can add several points within one segment. In the latter case, several pairs of figures will be shown as the label of the corresponding segment in the annotation layer (see the screenshot below).



Layer Properties

Includes all layer properties.



Fields Description

Name

Layer name.

Fore Color

Layer fore color.

Back Color

Layer background color.

Locked

Disable edit option for a layer. No segments can be modified or added.

Closed

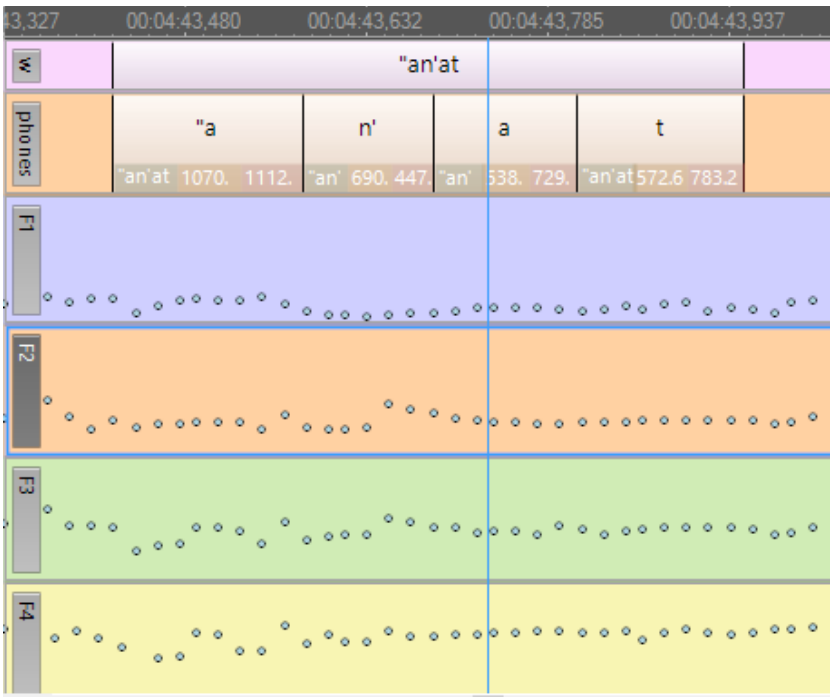
Close layer. Segments are no longer displayed, only the layer name is visible (on the left side).

Show On Spectrogram

Show layer on Spectrogram (testing phase, not yet available).

Chart

Display segment values as a chart. This feature can be used to display the results of perception tests conducted with Feature Space or point values for f0 or formant frequencies (e.g. listings imported from Praat, see also Import / Export). Set maximum and minimum values to obtain appropriate scaling for chart display. One annotation file can include both layers displayed as charts and as labels.



Show Boundaries

Switch off boundary display for a layer. Useful with layers containing very large number of segments. Can speed up program's performance.

P1 Name

Name of Parameter 1.

P2 Name

Name of Parameter 2.

P3 Name

Name of Parameter 3

Height

The height of a layer. Can also be changed with the mouse (see Annotation Layers / Resizing Layers).

Id

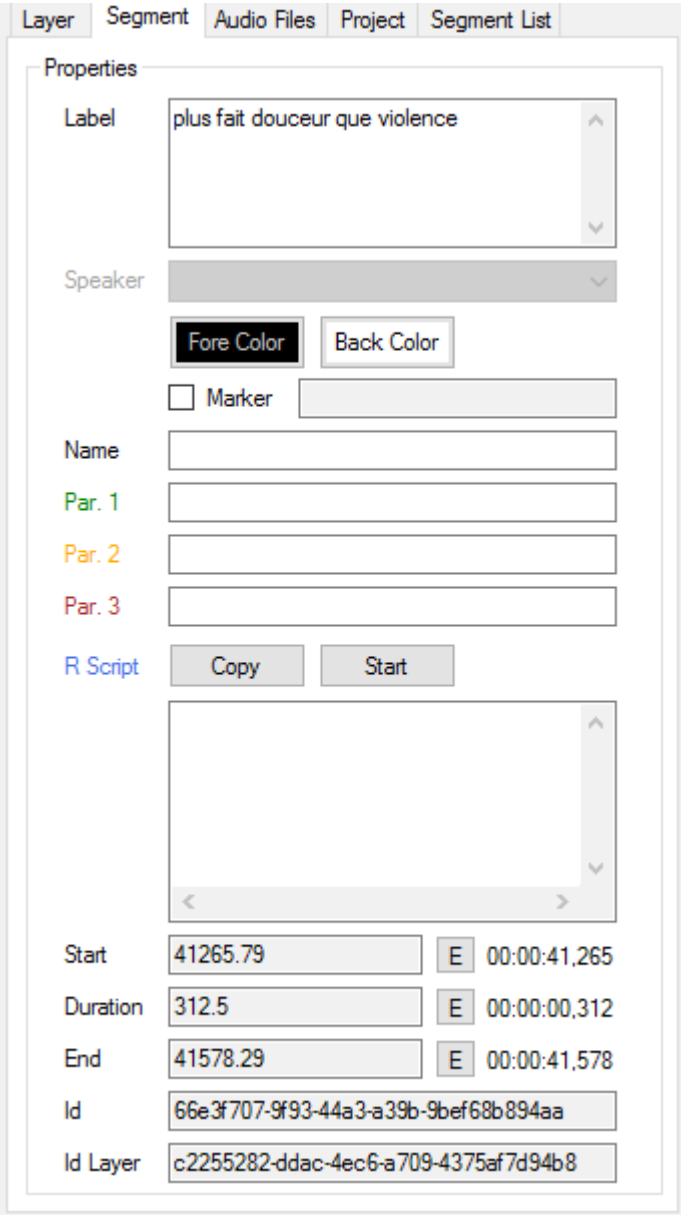
Unique layer identifier. Read only.

Coord. Style

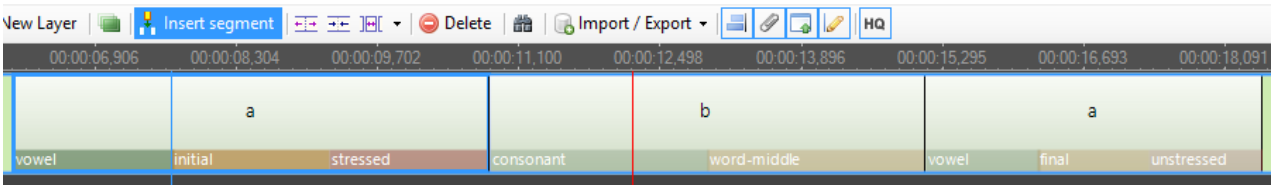
The ID number of the picture used as a background representation for Feature Space assigned to the selected layer. Read only.

Segment Properties

A panel including all segment parameters related to both the contents of the segment (its transcription label, parameter values), its visual display (colors, fonts), start and duration information, R script information, unique identifiers of segment and layer, and other.



NOTE: What are the Par. 1, Par. 2, Par. 3 fields? Each annotation segment in Annotation Pro includes additional fields supporting segment categorization according to the user's needs; one of them are three segment parameters (Parameter 1, Parameter 2, Parameter 3). Parameters can be used to keep supplementary information about the segment which we don't necessarily want to put into a separate annotation layer. Parameters containing any values are displayed at the bottom of the segments on colored background (here below, e.g.: vowel, consonant, stressed, unstressed):



Label

Segment label.

Speaker

Speaker (in preparation).

Fore Color

Font color for text labels.

Back Color

Segment background color.

Marker

Can be used to add an additional information related to the segment but not displayed (just saved in the annotation file).

Name

Can be used to add an additional information related to the segment but not displayed (just saved in the annotation file).

Par. 1

Parameter 1 value.

Par. 2

Parameter 2 value.

Par. 3

Parameter 3 value.

R Script - Copy

Copy script to clipboard.

R Script - Start

Launch R package and send the script to R. The results are plotted and saved as PDF files. More

R Script - Textarea

Script contents. The script contents can be edited or replaced by a user's script. The script is then automatically launched.

Start

Segment beginning in samples.

Duration

Segment duration in samples.

End

End of segment in samples.

Id

Segment unique identifier. Read only.

Id Layer

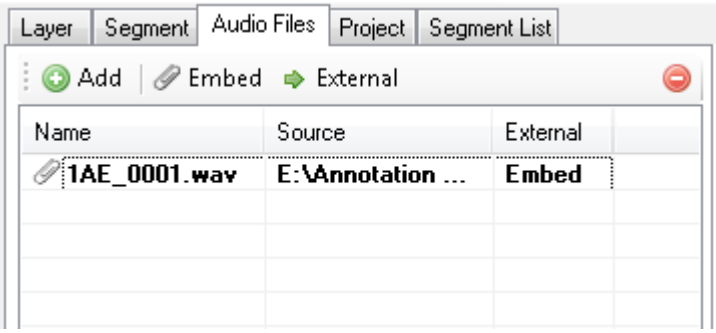
The identifier of the layer containing the segment. Read only.

More About R Plots

Audio Files

The list of all audio files related to the .ant file. By default, the program automatically opens an audio file at launch if it is named exactly the same as the annotation file and is located in the same folder. It is also possible to associate one or more audio files having different names and locations with the annotation file. This can be achieved with Auto Save Open Audio at the right side of Audio Toolbar. After selecting this option, the opened audio files will be automatically added to Audio Files. The file list includes the following columns: Name - file name, Source - path to the folder on a disk, External - information whether the file is embedded (Embed) in the .ant file or External (an the program only remembers its path).

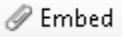
Use Application Menu / Tools / Options to set the default option for all new files to either External or Embed with: *Open audio files as external by default*. Double click on the file name on the list to open the file in the program. The name of the currently opened audio file is marked in bold on the list.



Buttons Description

Add

Add new audio file to annotation.



Embed

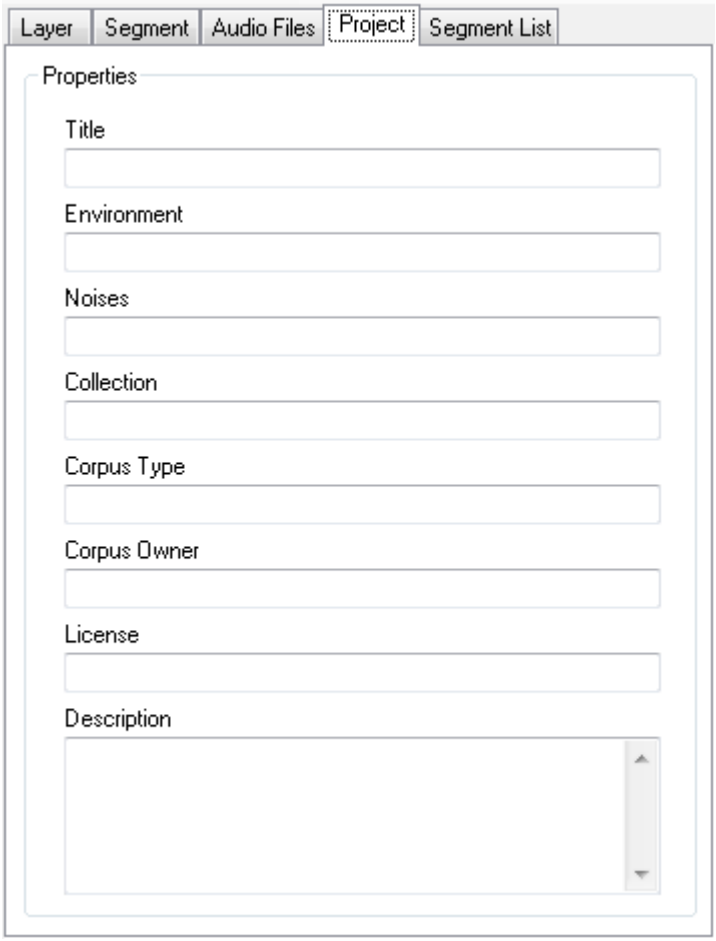
Change to Embed mode for the selected file and save it inside the annotation (zipped .ant file).

External **External**

Change to External mode for the selected file and remember only the file directory path.

Project Properties

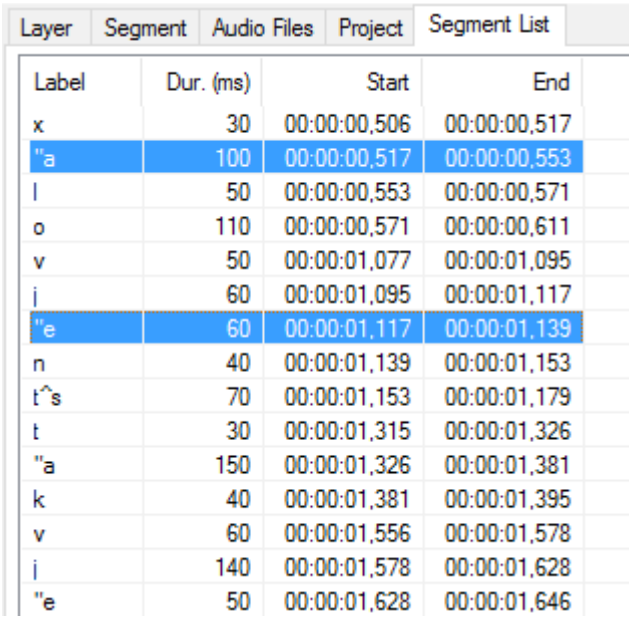
Information about the project related to the recording. General information about the corpus type, recording conditions, license etc.



Segment List

List of all segments included in the selected layer. Useful for inspecting the segments using a different perspective. For example, it can be easier to find a very short segment on this list than in the layer. If by any chance a segment gets outside the wave duration range, it can be also easier to identify with on the list (such situation can happen e.g., when importing from external formats).

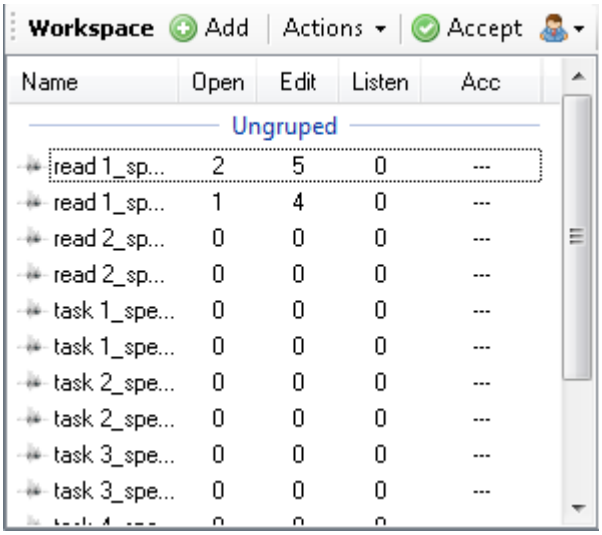
When a segment is selected on the list (by clicking on a row), it also becomes selected and highlighted in the annotation layer. One or more rows can be selected by clicking and keeping CTRL key pressed.



Label	Dur. (ms)	Start	End
x	30	00:00:00,506	00:00:00,517
"a	100	00:00:00,517	00:00:00,553
l	50	00:00:00,553	00:00:00,571
o	110	00:00:00,571	00:00:00,611
v	50	00:00:01,077	00:00:01,095
j	60	00:00:01,095	00:00:01,117
"e	60	00:00:01,117	00:00:01,139
n	40	00:00:01,139	00:00:01,153
t^s	70	00:00:01,153	00:00:01,179
t	30	00:00:01,315	00:00:01,326
"a	150	00:00:01,326	00:00:01,381
k	40	00:00:01,381	00:00:01,395
v	60	00:00:01,556	00:00:01,578
j	140	00:00:01,578	00:00:01,628
"e	50	00:00:01,628	00:00:01,646

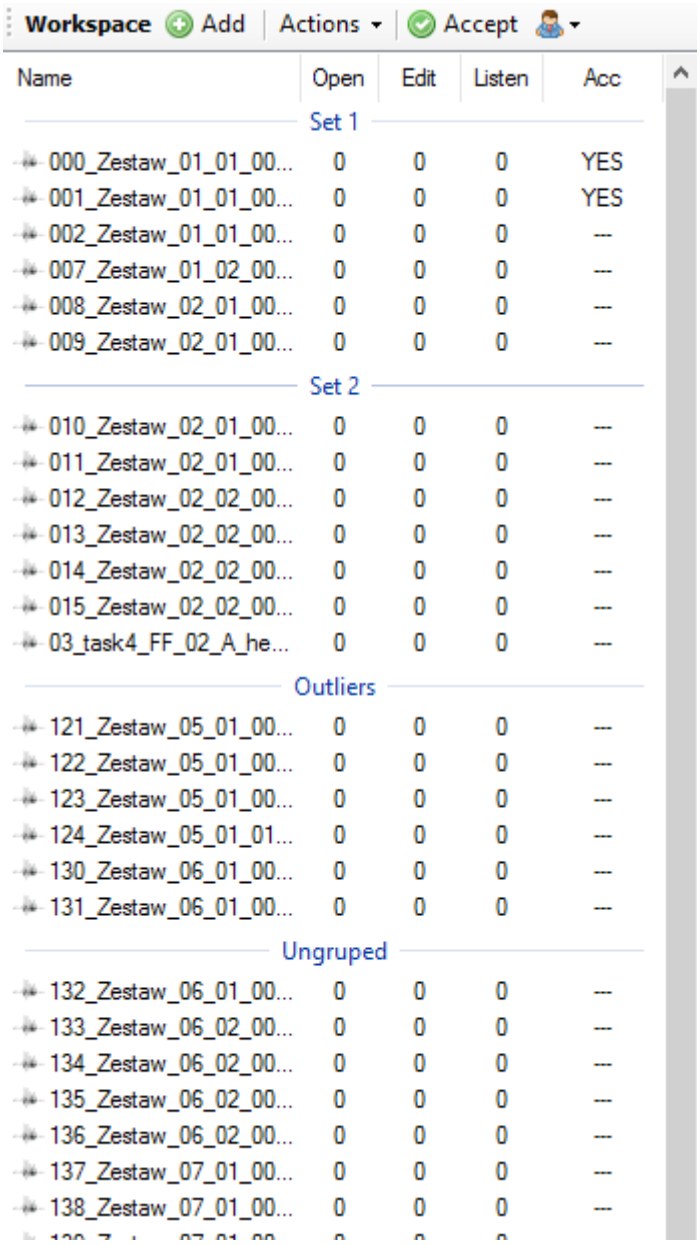
Workspace Panel

Workspace is dedicated to file collections management. Workspace can be saved to file (*.antw) and open from file. Workspace Panel can be turned on / off with the Workspace button on Application Toolbar or from Application Menu / View / Workspace. Use Add button on Workspace Toolbar to add new annotation files (*.ant) to Workspace. If Workspace was modified during work, the program will ask to save changes to Workspace while saving data.



Grouping

Files added to Workspace, can be additionally grouped into sub-groups using commands from Actions menu. A very useful feature for large Grouping can be very useful when dealing with collections of files divided into a number of groups/categories that still need to be treated as one large collection.



Batch Plugins Operations

When working with Workspace, you can use Application Toolbar / Plugins / Workspace Mode to automatically run plugins for all files included in Workspace.

Multi Export

Use Actions menu to export data from all selected files to CSV format.

Sessions

Managing perception tests conducted with Annotation Pro using Session Mode.

Statistics

Workspace includes the following columns: Open - show the number of times the file has been opened. Edit - how many changes were introduced to the annotation, Listen - how many times the file was played, Acc - the status of file, the status can be manually set to 'Accepted'. These statistics can be cleared (reset to zero) with Reset Statistics from Workspace Menu.

More About Workspace Toolbar
More About Plugins

Workspace Toolbar

Includes commands for Workspace Panel

Buttons Description

Add

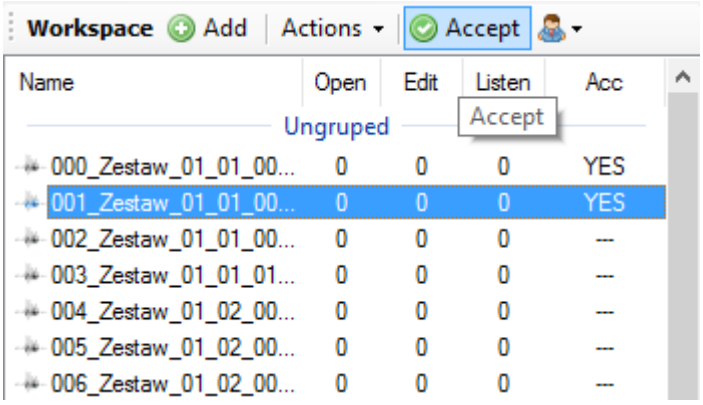
Add new files to Workspace.

Actions

Menu including more commands related to Workspace.

Accept

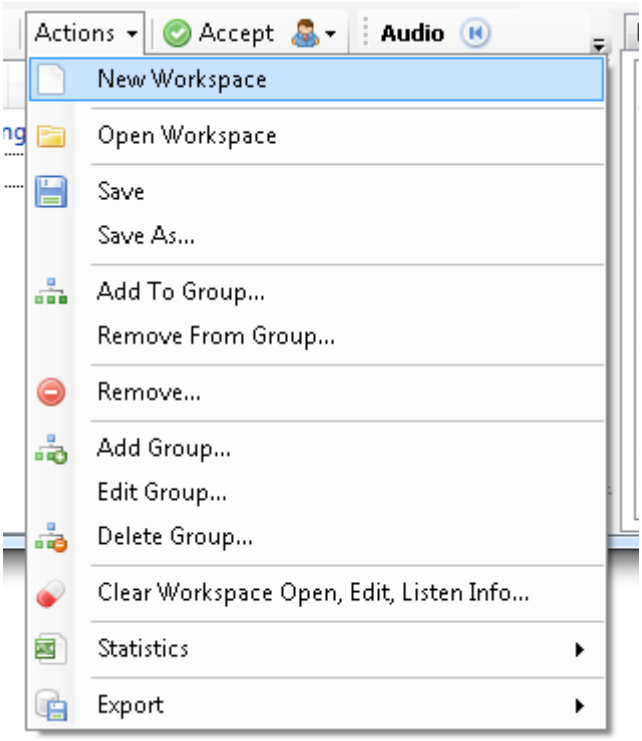
Change status of the selected file to Accepted - YES is displayed in the Acc column (click again to remove the Accepted status).



Session

Menu including commands for Session Mode.

Actions Menu



New Workspace

Create new empty Workspace.

Open Workspace

Open an existing Workspace from disk.

Save

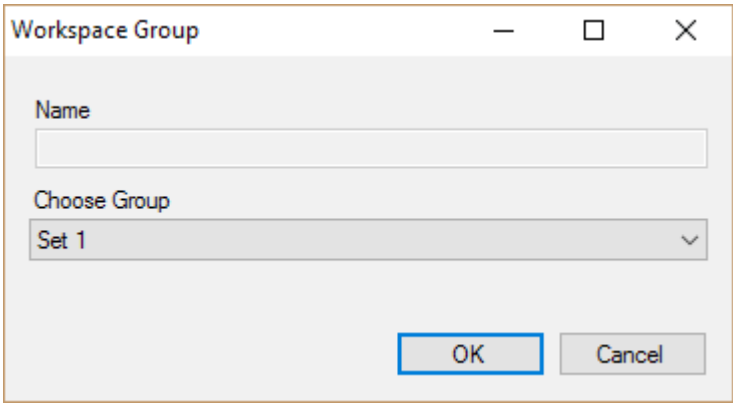
Save changes to the Workspace. If saving for the first time, the program will ask for Workspace name.

Save As

Save Workspace using a different name.

Add To Group

Add selected files to the group indicated in the dialog window. You need to create group(s) in order to add files to group (see Add Group below).



Remove From Group

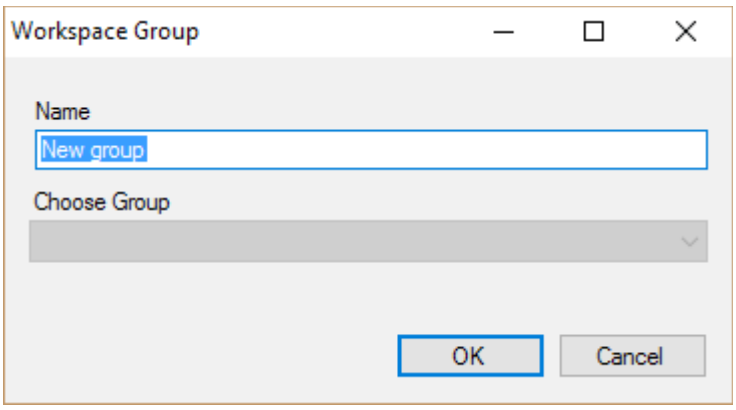
Remove selected files from group (the files will still be available in Workspace, as ungrouped).

Remove

Remove selected files from Workspace

Add Group

Add new group using your preferred name for the group.



Edit group

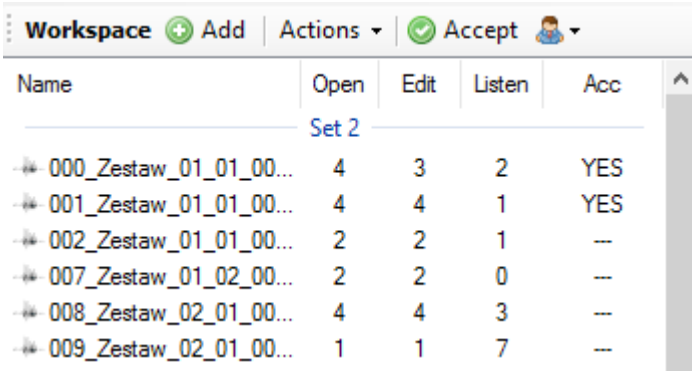
Modify selected group.

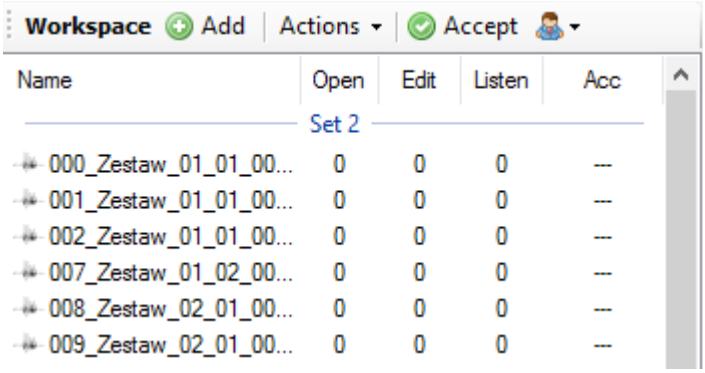
Delete Group

Remove selected group.

Clear Workspace Open, Edit, Listen Info

Clear Workspace Open, Edit, Listen statistics and Accepted status displayed in the respective Workspace columns.





Statistics / Frequency List - Total

Create a frequency list based on the text labels in all selected files.

Statistics / Frequency List - Group by Files

Create a frequency list based on the text labels in all selected files, grouped by files.

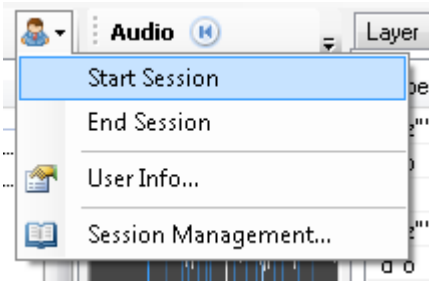
Export / Selected Files to Separate CSV

Export selected files to separate CSV files.

Export / Selected Files to One Big CSV

Export selected files to one common CSV file.

Session Menu



Start Session

Start Session Mode.

End Session

Stop Session Mode.

User Info

Open dialog with session participant's personal data for Session Mode.

Session Management

Open Session Management window.

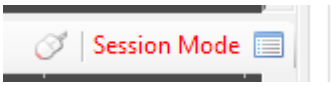
More About Session Mode

More About Session Management

Perception Tests: Session Mode

Depending on the specifications of annotation, and especially the specifications of perception tests, it is sometimes necessary to record all actions taken by the program user, not only the final result of work.

The Session Mode is a special mode of the program registering all actions taken by the user. The mode is started with Worskpace Toolbar / Session / Start Session. After starting a session, all operations performed by the user are registered and saved to file together with the corresponding timestamps. When the program is working in Session Mode, a red test 'Session Mode' is displayed on the right side of Annotation Toolbar.

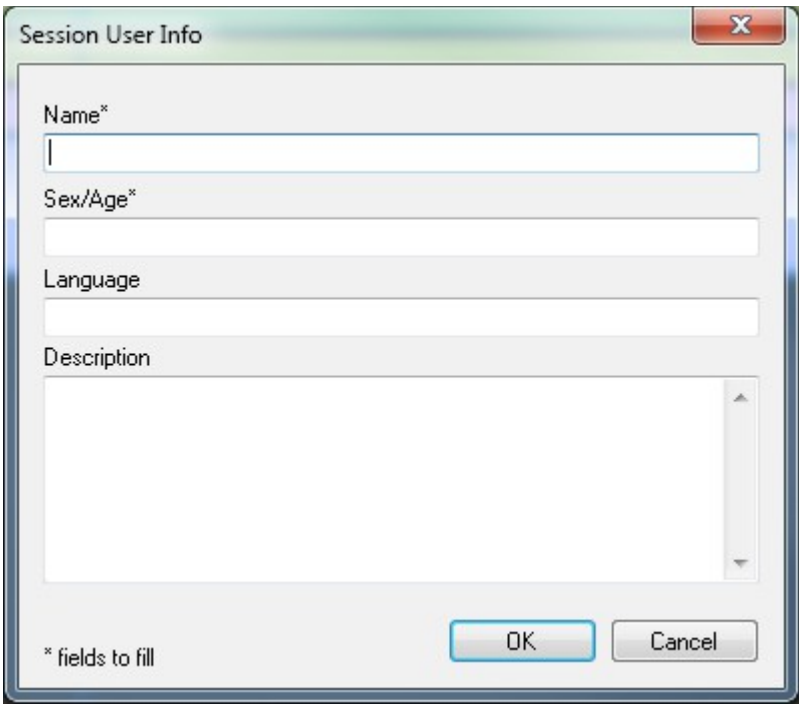


Additionally, the icon of the Session menu is blinking in red.

In order to end Session choose Workspace Toolbar / Session / End Session. After a session is finished, all session data can be inspected in Session Management.

User Info

When conducting perception tests, a useful feature is a possibility to collect personal information about the test participants as part of the experiment procedure. In Annotation Pro, a user data form is available Workspace Toolbar / Session / User Info. Information provided by the test participant with this form will be stored in the session data file. If the option User Must Authorize has been selected in Application Menu / Tools / Options, the user will be requested to fill in the form before he/she can start the session.



Session configuration

Session mode properties can be modified in Application Menu / Tools / Options.

Session Management

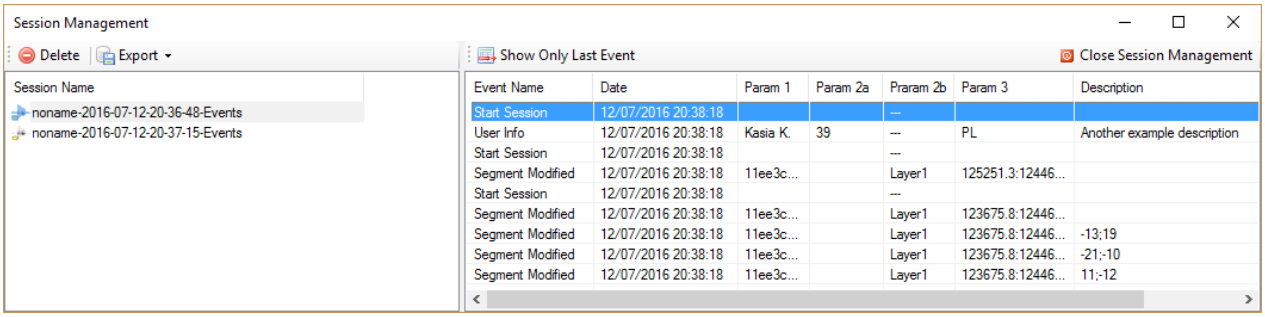
Session management window accessible at: Workspace Toolbar / Session / Session Management. Includes options for viewing and managing session data.

More About Workspace Toolbar
More About Management

Session Management

Window showing all session found in the current Workspace folder. Here, all actions taken in Sesion Mode can be inspected. The data can be exported to a CSV file. Session files can be removed from disk with the Delete button. When Show Only Last Event is chosen, only the last operation for a particular object will be displayed in the list (e.g., when a participant has a possibility to click several times on the Feature Space before making his/her final decision, the experimenter may wish to see only the last choice). If

the Workspace Toolbar / Session / User Info window is opened by the user during the session, this will be treated as one of the registered events and also displayed in the list.

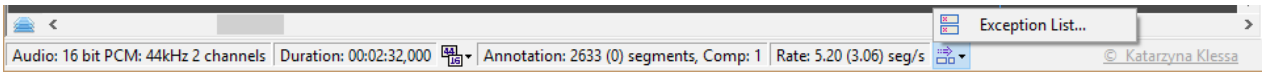


More About Session Mode

More About Workspace Toolbar

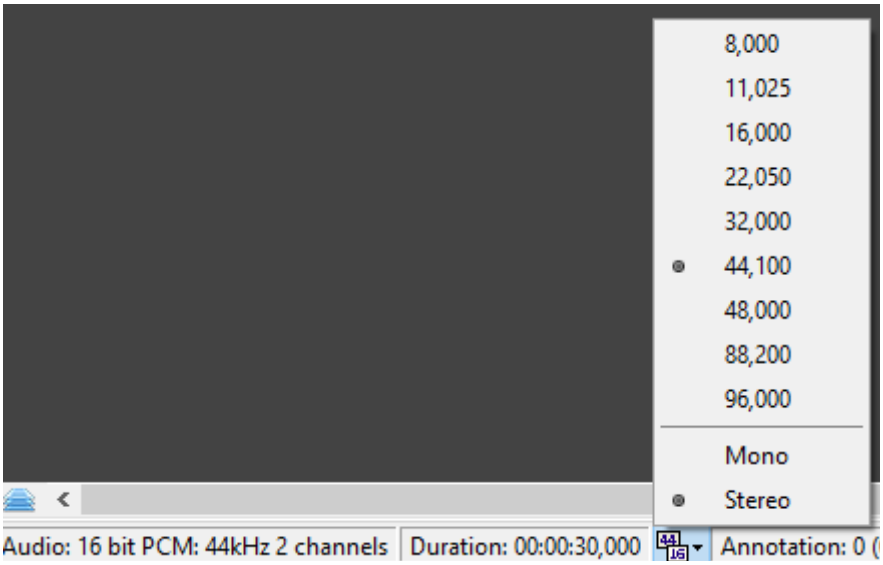
Application Status

The application status bar visible at the bottom of the main program window displays general audio and annotation parameters.

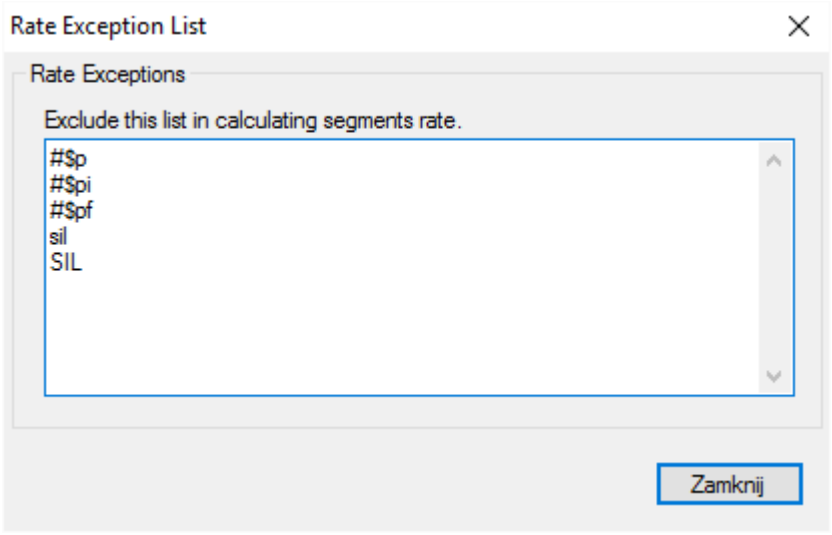


The status includes:

- Audio parameters; including the wave file formats supported by the program:



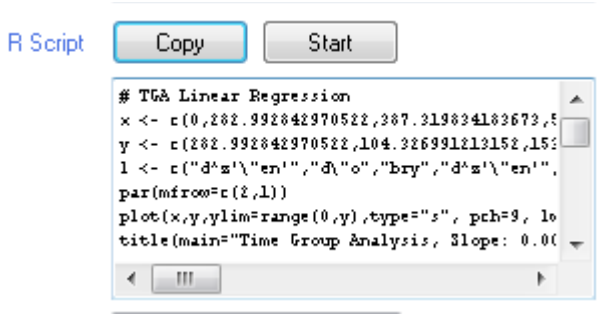
- Sample rate of the annotation file. The sample rate is automatically adjusted to audio sample rate.
- Speaking rate net (segments per second), only actual speech segment included in calculation.
- Speaking rate gross (segments per second), based on all annotation layer.
- Exception list for calculating the speaking rate (the user can define segment labels to be excluded from speaking rate calculations).


Rate Exception List
Rate Exceptions
Exclude this list in calculating segments rate.
#$p
#$pi
#$pf
sil
SIL
Zamknij

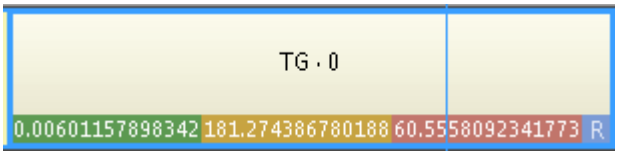
R Plots

Annotation Pro uses R software package for plotting charts. R can be downloaded from: http://www.r-project.org/ (Venables, Smith & the R development core team, 2005). After installing to default folder, Annotation Pro will automatically identify the location of the R package. In case if for some reasons, R path has not been automatically identified, it can be set manually here: Application Menu / Tools / Options.

Statistical operations built in Annotation Pro (or some of the Plugins) generate R script and save it to a special field within a segment. See Segment Properties. The contents of the script can be modified manually. More detailed information about creating R scripts can be found at the R project website.



Segment containing a script has a small R letter on a blue background in the right bottom corner.



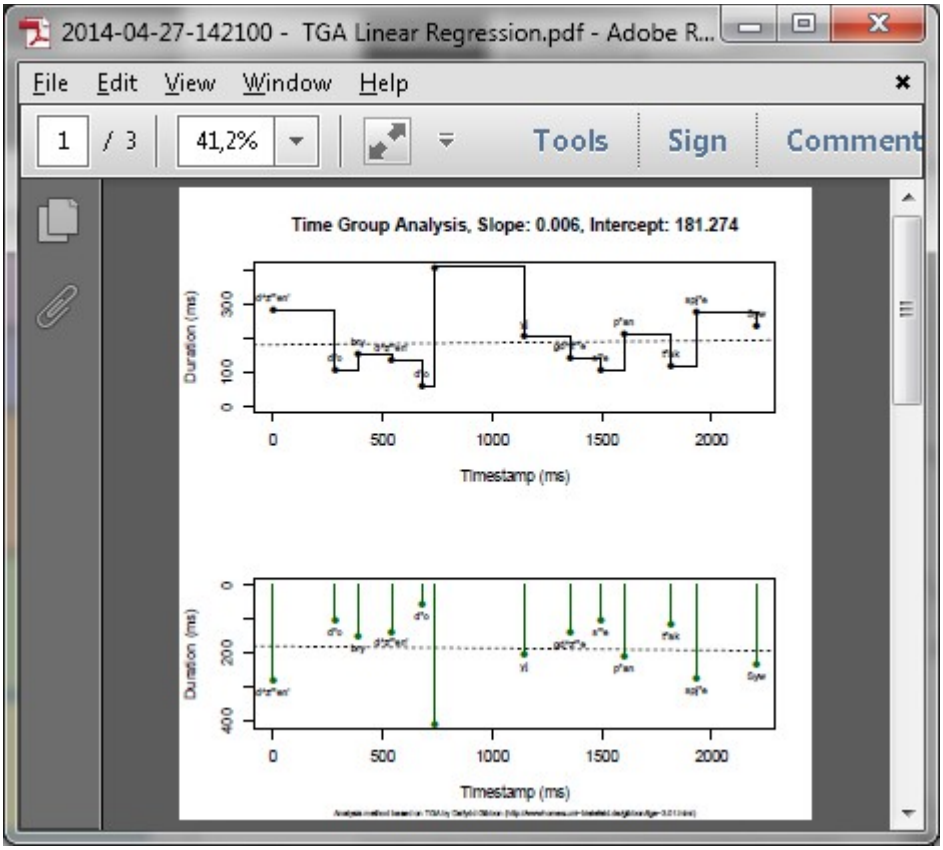
An Example R Script

```
# Annotation Pro + TGA Linear Regression plugin
x <-
c(0,282.992842970522,387.319834183673,540.569905045352,678.458049886621,736.507
936507937,1145.60994189342,1353.28798185941,1493.90589569161,1599.99982284581,1
814.0587797619,1930.15890731293,2204.43009495465)
```

```
y <-
c(282.992842970522,104.326991213152,153.250070861678,137.88814484127,58.0498866
213152,409.102005385488,207.678039965986,140.6179138322,106.093927154195,214.05
89569161,116.10012755102,274.271187641723,237.304776077098)
l <-
c("d^z'\"en'","d\"o","bry","d^z'\"en'","d\"o","bry","yj","gd^z'\"e","s'\"e","p\
"an","t\"ak","spj\"e","Syw")
par(mfrow=c(2,1))
plot(x,y,ylim=range(0,y),type="s", pch=9, lwd=1,col="black", xlab="Timestamp
(ms)", ylab="Duration (ms)")
title(main="Time Group Analysis, Slope: 0.006, Intercept: 181.274")
points(x,y,pch=16)
text(x,y,l,pos=3,cex=0.7)
abline(181.274386780188,0.00601157898342681,lwd=1, lty="dashed", col="black")
plot(x,y,ylim=rev(range(0,y)),type="h",pch=9, lwd=1,col="dark green",
xlab="Timestamp (ms)", ylab="Duration (ms)")
points(x,y,pch=16,col="dark green")
text(x,y,l,pos=1,cex=0.7)
abline(181.274386780188,0.00601157898342681,lwd=1, lty="dashed", col="black")
title(sub="Analysis method based on TGA by Dafydd Gibbon (http://wwwhomes.uni-
bielefeld.de/gibbon/TGA/)", cex.sub=0.5)
par(mfrow=c(1,1))
plot(x,y,ylim=range(0,y),type="s", pch=9, lwd=1,col="black", main="Time Group
Analysis, Slope: 0.006, Intercept: 181.274", xlab="Timestamp (ms)",
ylab="Duration (ms)")
points(x,y,pch=16)
text(x,y,l,pos=3,cex=0.7)
abline(181.274386780188,0.00601157898342681,lwd=1, lty="dashed", col="black")
title(sub="Analysis method based on TGA by Dafydd Gibbon (http://wwwhomes.uni-
bielefeld.de/gibbon/tga-3.01.html)", cex.sub=0.5)
plot(x,y,ylim=rev(range(0,y)),type="h",pch=9, lwd=1,col="dark green",
main="Time Group Analysis, Slope: 0.006, Intercept: 181.274", xlab="Timestamp
(ms)", ylab="Duration (ms)")
points(x,y,pch=16,col="dark green")
text(x,y,l,pos=1,cex=0.7)
abline(181.274386780188,0.00601157898342681,lwd=1, lty="dashed", col="black")
title(sub="Analysis method based on TGA by Dafydd Gibbon (http://wwwhomes.uni-
bielefeld.de/gibbon/TGA/)", cex.sub=0.5)
```

Running an R script

In order to run an R script use Start button on Segment Properties panel. R software will create a PDF and save it to R Plots Folder. The folder containing all generated scripts is available from: Application Menu / Statistics / Open R Plots Folder.



More About Segment Properties

More About Options

More About Application Folders

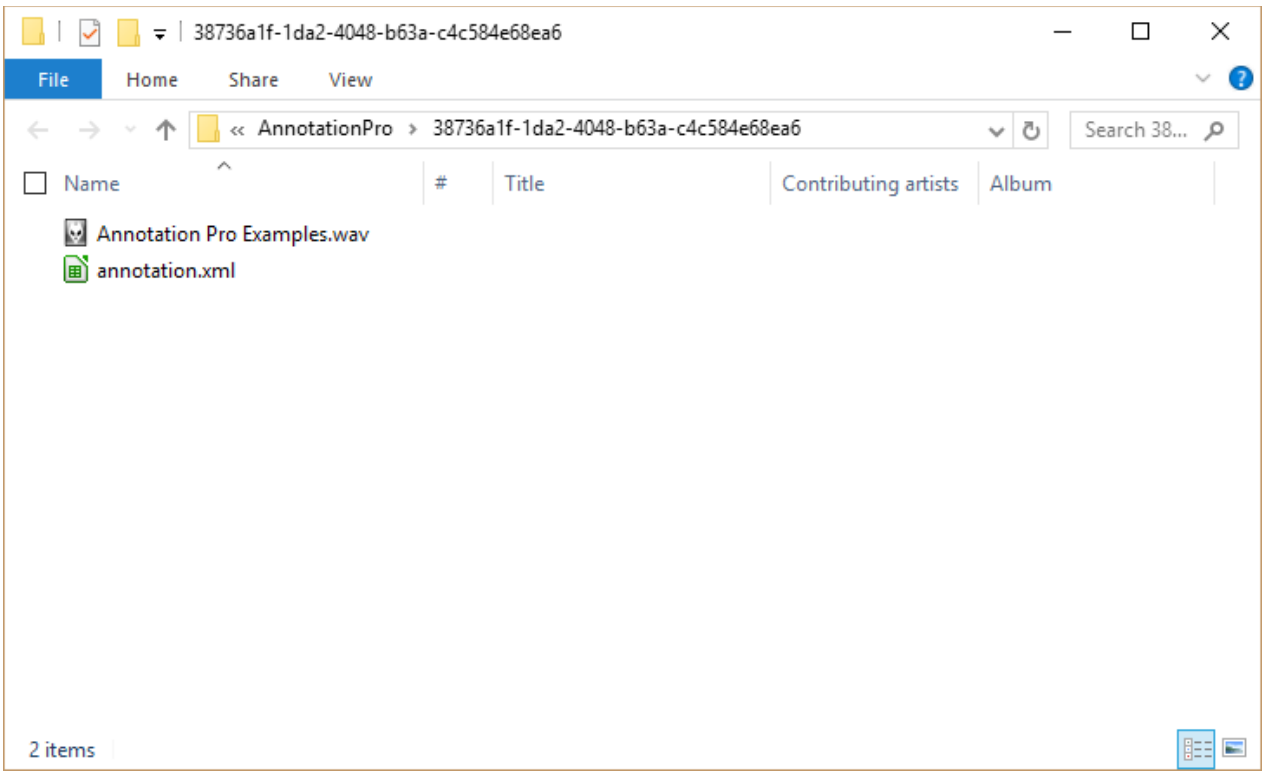
Application Folders

Annotation Pro uses various folders for proper work. The folders' location on disk is strictly defined.

Data Folder

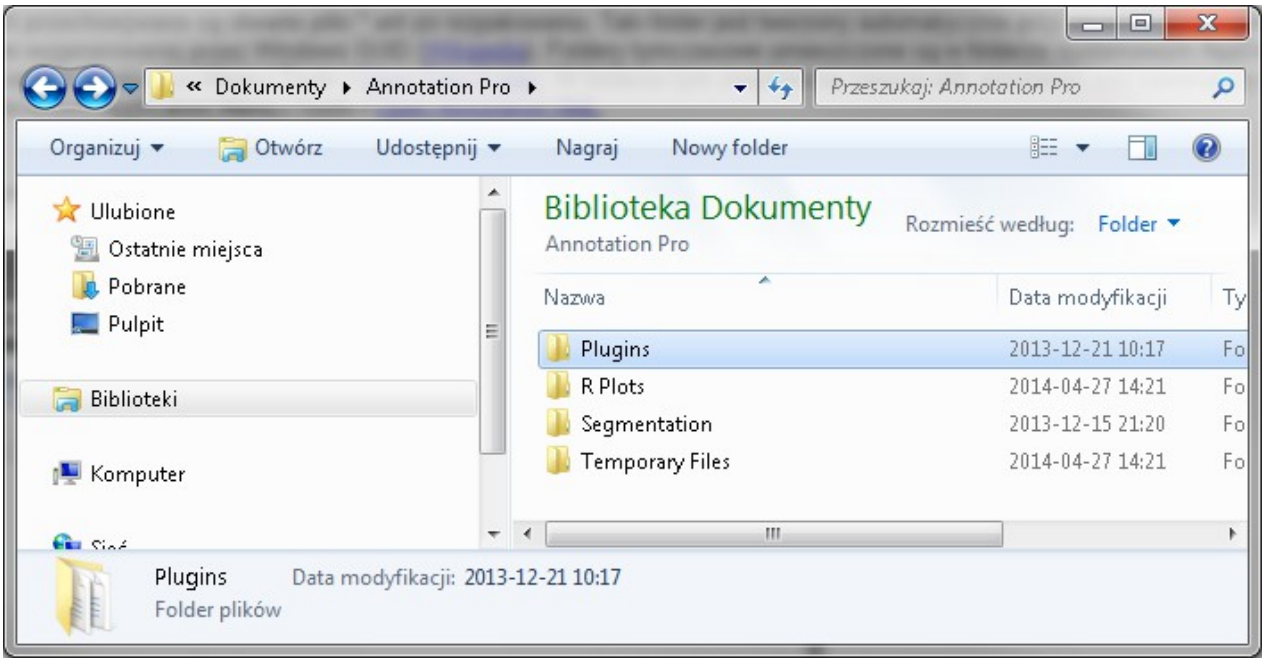
Temporary folders where currently open annotation files *.ant are stored after unzipping. Such a folder is created automatically when the *.ant file is open (technically, *.ant is just a ZIP archive). The content is unzipped to the temporary folder named with a name automatically generated by Windows GUID (Wikipedia). Temporary folders are saved to the AppData\Roaming system folder in AnnotationPro subfolder. This folder can be opened for the current file with Application Menu / Tools / Open Data Folder command. This folder always contains annotation.xml file containing the annotation and (optionally) the embedded audio files. The annotation.xml file can be opened in Annotation Pro with Application Menu / Tools / Open Annotation XML.

Example:
C:\Users\Kasia\AppData\Roaming\AnnotationPro\38736a1f-1da2-4048-b63a-c4c584e68ea6



User Folders

Other program folders are located in the Documents system folder individually for each Windows user in Annotation Pro subfolder.



Plugins folder

Folder containing user's plugins, enabling extending the native options of Annotation Pro.

R Plots folder

Folder containing all plots generated by the user with R scripts in PDF format.

Segmentation folder

Automatic segmentation module. The availability of the currently integrated module is restricted by copyright. A new freely available module is in preparation (Bigi & Klessa, 2015).

Temporary Files folder

Temporary files created by the program during work.

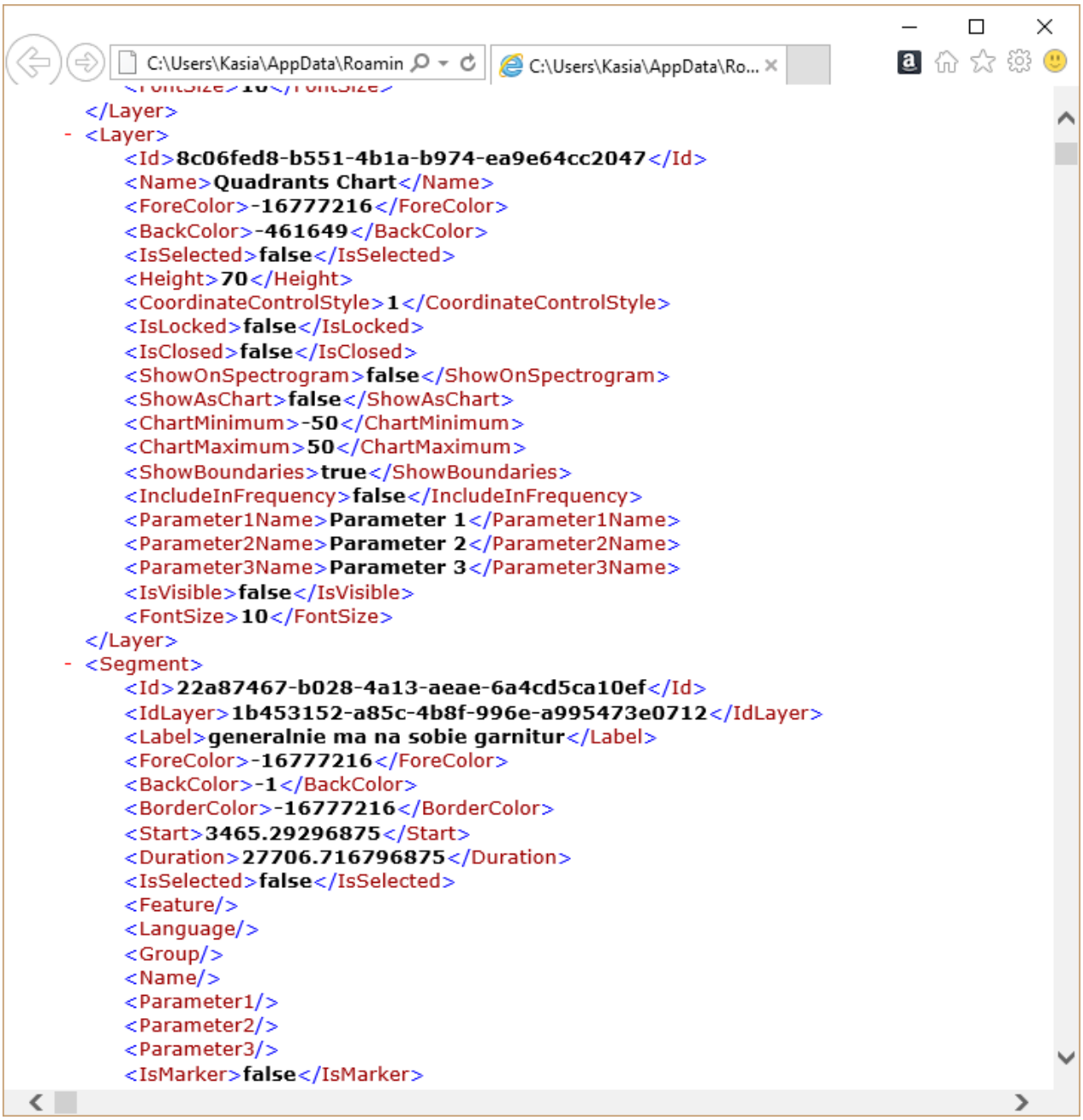
More About R Plots

More About Annotation Format

More About Plugins

Annotation Format

Annotation Pro native file format is based on the XML format. Annotation for the currently opened file can be viewed with Application Menu / Tools / Open Annotation XML.



File format

<AnnotationSystemDataSet> The main tag, containing all others

- **<Layer> -** Information about the layer
  - Id
  - Name
  - ForeColor
  - IsSelected
  - Height
  - CoordinateCotrolStyle
  - IsLocked
  - IsClosed
  - ShowOnSpectrogram
  - ShowAsChart
  - ChartMinimum
  - ChartMaximum
  - ShowBoundaries
  - IncludeInFrequency
  - Parameter1Name
  - Parameter2Name
  - Parameter3Name
- ** -** Information about the segment
  - Id
  - IdLayer
  - Label
  - ForeColor
  - BackColor
  - BorderColor
  - Start (in samples)
  - Duration (in samples)
  - IsSelected
  - Feature
  - Language
  - Group
  - Name
  - Parameter1
  - Parameter2
  - Parameter3

        - IsMarker
        - Marker
        - RScript
    - **<Audio File>** Information about audio files
        - Id
        - Name
        - FileName
        - External
        - Current
    - **<Configuration>** Parameters, project information, edit date, file version
        - Key
        - Value

System values for <Key> in <Configuration>

- Version
- FileVersion
- Samplerate
- Created
- Modified
- ProjetTitle
- ProjectEnvironment
- ProjectNoises
- ProjectCollection
- ProjectCorpusType
- ProjectCorpusOwner
- ProjectLicense
- ProjectDescription

IMPORTANT NOTICE! Start and Duration of a segment are given in samples thus the necessary configuration parameter is the Samplerate that enables defining segments' position in time.

Plugins – extending the built-in functionality

How to write my own plugin

Annotation Pro enables easy and efficient extensions of the built-in functionality by means of plugins (see also Klessa, 2016). In order to create a plugin you do not need any expensive tools. Plugins should be created in C# programming language.

In order to create or edit a plugin it is sufficient to use a simplest notepad software or any other program supporting edition of C# files; cf. e.g. Notepad 2 software which have more options for displaying syntax in colors or line numbering. You can also download a freeware version of Visual Studio – Visual Studio Express that offers even more support for writing in C# or a simplified version of the tool Visual Studio Code.

Example / Hello World plugin

```
using System;
using System.Windows.Forms;
using AnnotationPro.Plugin;
using AnnotationPro.Logic;
using AnnotationPro.Presentation;

namespace AnnotationPro.Plugin
{
  public class AnnotationPlugin : IAnnotationPlugin
  {
    public void Run( AnnotationEditor editor )
    {
      // BEGIN USER CODE

      editor.Cursor = Cursors.WaitCursor;
      MessageBox.Show("Hello World! I'm in 'Documents\\Annotation Pro\\Plugins'
      folder.","Annotation Pro Plugin");
      editor.Cursor = Cursors.Default;

      // END USER CODE
    }
  }
}
```

1. Copy the file above and save it as: Examples#HelloWorld.cs
2. Save it to the folder: Dokumenty\Annotation Pro\Plugins
3. Run it in Annotation Pro here: Plugins -> Examples -> HelloWorld. If you cannot see the command there, press: Plugins -> Refresh.
4. Open file: Examples#HelloWorld.cs in Notepad or other editor and look at its content.

Grouping plugins commands

When the number of your plugins becomes too high and it is not comfortable to display them in one list you can group them in the Plugins . The character # in the name of your plugin indicates dividing the name of the group from the name of the specific plugin. The part of the name to the left from # is the group name. The group will be automatically created in the menu when you start the application.

Annotation Pro API

Application Programming Interface is a detailed description of classes and functions available for the creators of plugins. You can check the detail parameters of functions or methods of classes.

Go to Annotation Pro API website

Keyboard Shortcuts

Shortcut	Command	Description
Ctrl + N	New	Create new empty annotation.
Ctrl + O	Open	Open file from a disk folder. The command opens audio files (*.wav), annotation files (*.ant or *.antx), and workspace (information about file collection) files (*.antw).
Ctrl + S	Save	Save changes to file.
Ctrl + Shift + S	Save As	Save file under a new name.
Ctrl + Z	Undo	Undo the previous operation. The program can undo all operations until the last Save operation. Saving to file clears the Undo memory.
Ctrl + Y	Redo	Redo the previously undone operation on condition that the annotation was not saved to file in the meantime.
Ctrl + Space	Play / Stop	Play and stop audio playing.
Ctrl + X	Cut	Cut.
Ctrl + C	Copy	Copy.
Ctrl + V	Paste	Paste.
Ctrl + NumPad8	Select Audio From Segment	Select audio exactly for the selected segment.
Ctrl + D	Clear Audio Selection	Remove audio selection.
Ctrl + L	Add New Layer	Add new empty layer and select the new layer.
Alt + L	Duplicate Layer	Duplicate selected layer with all its segments and select the new layer.
Insert	Insert Segment	Insert new segment to the selected layer. If a fragment of sound is selected on the Audio Panel, the new segment is inserted for the selected fragment.
Ctrl + Q	Split Segment	Split segment into two parts at the cursor position and select (highlight) the segment to the right from the cursor position.
Ctrl + Shift + Q	Consolidate Segment	Consolidates two or more selected segments into one segment. There can't be any non-selected segments between the selected ones. The labels of the selected segments will also be consolidated into one label (the original labels will be put into the new segments and separated by spaces).

Ctrl + R	Auto Resize Segments	Automatically resize selected segment(s) to the left-hand neighboring segment..
Ctrl + NumPad2	Resize To Audio Selection	Resize segment to audio selection.
Ctrl + K	Space Segments Equally	Space segments in equal distances from one another. If any segments are selected, the operation is done for the selected segments. Otherwise, it is done for all segments in the selected layer.
Ctrl + Delete	Clear Parameters	Clear parameters from all selected segments.
Ctrl + Insert	Fill Pauses	Automatically fill pauses (gaps / empty spaces) between segments with segments with a user-defined pause label.
Alt + Shift + Q	Consolidate	Consolidates neighboring segments having the same label. In some cases it might be useful to consolidate segments having the same labels into one. After selecting this option from menu, a dialog window is displayed requesting for a label to be used for the newly created consolidated segments. Any label can be used, according to the user's preferences.
Ctrl + G	Group	Joining selected segments into a group. The segments become connected by a unique identifier. Segments belonging to a group can be recognized by a small plus mark in the top right corner of the segment. After clicking on one of the grouped segments, all the grouped segments become highlighted.
Ctrl + U	Ungroup	Ungroup the previously grouped segments. The plus mark is removed from the segment's display.
Ctrl + Shift + G	Auto Group	Automatically group segments for two or more selected layers. Segments are grouped if they start or end at the same time in different layers. A small plus mark is displayed in the top right corner for all segments belonging to a group.
Ctrl + Shift + D	Clear Segment Selection	Removes selection for any selected segments in the selected layers. No segments are selected.
Ctrl + A	Select All	Select all segments in the selected layers.
Ctrl + I	Auto Segmentation	Auto segmentation tool is an intelligent tool supporting automatic conversion into SAMPA and segmentation of orthographic annotation input into words, syllables and

		individual phones. Unfortunately, at the current stage, the availability of the tool is restricted and can't be made freely available due to copyright issues (independent from Annotation Pro license). With a view to support freely available automatic segmentation and time-alignment, Annotation Pro offers extended import-export options from external formats, e.g., SPPAS automatic annotation tool's format *.xra (Bigi, 2016). Thanks to this, it is possible to easily use automatically segmented data for all languages supported in SPPAS (e.g., English, French, Chinese or Polish).
Ctrl + Left	Go To Prev Segment	Go to the previous (left) segment within the selected layer.
Ctrl + Right	Go To Next Segment	Go to the next (right) segment within the selected layer.
Ctrl + Shift + Left	Go To Prev Segment & Selection	Go to the previous (left) segment within the selected layer and select (highlight) the corresponding audio fragment.
Ctrl + Shift + Right	Go To Next Segment & Selection	Go to the next segment on the right within the selected layer and select audio corresponding to the selected segment
Ctrl + F	Find & Replace	Find a word / phrase and replace it with another word / phrase. The dialog window is a standard Windows Find & Replace window.
Delete	Delete	Delete selected segments or layers. All selected segments will be deleted. If there are no segment in the selected layer, the layer will be deleted.
Ctrl + T	Spectrogram	Show / Hide Spectrogram.
Ctrl + W	Waveform	Show / Hide Waveform.
Ctrl + E	Zoom To All Segments	Adjust zoom to show all segments.
Ctrl + Shift + E	Zoom To Selected Segments	Adjust zoom to show all selected segments.
F1	Auto Add To Workspace	Automatically add opened files to workspace collection.
F2	Follow Cursor	Signal / annotation display follows cursor when playing the sound signal.
F3	Auto Rewind	Cursor returns to its previous position after the sound replay is

		stopped.
F4	Loop Audio	Loop audio. Play audio over and over.
F5	Magnify	Magnify waveform display (vertically). Useful with recordings characterized by low intensity.
F6	Boundaries	Show segment boundaries in Audio Panel. Useful for manual corrections of segmentation / annotation.
F7	Black & White	Show audio panel in black & white. Useful for screenshots in printed publications.
F8	Snap To Segments	Automatically snap segments when editing boundary positions. Useful for manual correction of segmentation.
F9	Stick To neighbors	Stick boundaries of neighboring segments. After sticking, the boundaries of neighboring segments move together, as if they were one common boundary.
F10	Auto Selection	After single clicking on a segment, it becomes automatically highlighted in the Audio Panel.
F11	Auto Edit Mode	Auto edit mode. Enables inserting segment boundaries into a layer in the course of audio playing. Can be useful e.g., for preliminary segmentation.
F12	Auto Save Open Audio	Add the path of the last open file to Audio Files that are saved to *.ant file together with the annotation.

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This book is the ideal companion of the Annotation Pro software

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