The Ultrasonographic Contour Analyzer for Tongue Surfaces (Ultra-CATS)

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Technology description

Description

Ultrasound is a biologically safe and convenient way for researchers in Speech-Language Pathology, Speech Science or Linguistics to study the shape and the movement of the tongue during speech and swallowing. However, the manual frame-by-frame analysis of ultrasound films is time-consuming and tedious. The automatic extraction of tongue contours from ultrasound films poses challenging image analysis problems that have not yet been solved satisfactorily. Therefore, we decided to develop Ultra-CATS.

System Requirements:

Windows NT/2000/XP

Please note: If you only want to use the manual tracking and the video player features, you can also install Ultra-CATS in Windows 98. However, if you use the automatic motion tracker in Windows 98, the processing speed slows down to a crawl and the system is likely to become unstable.

RAM: 256MB

10 MB available hard disk space

Windows Media Player 9

DirectX 8

Video file format: AVI, WMV, MPG; maximum screen is size 400 x 400 pixels

Please note that Ultra-CATS does not properly resize and process video files that have a screen size in excess of 400 x 400 pixels.

We recommend the use of the file format Windows media video V9.

We recommend that you limit the video clip length to no more than 10 seconds of film or 300 images.

Limitations

Ultra-CATS was written in C++ and compiled for Microsoft Windows. We have successfully tested the software in Windows XP and reduced the number of remaining bugs to a minimum. However, problems may occur when running the software on different computers. To keep from losing your work, we recommend that you save your data frequently while you analyze image sequences. We

cannot be held responsible in the event of data loss or equipment damage resulting from the installation and use of Ultra-CATS. Ultra- CATS is freeware and is distributed AS IS.

Application area

A tool for the semi-automatic or automatic analysis of tongue movement in B-mode ultrasound films.

Advantages

The Ultrasonographic Contour Analyzer for Tongue Surfaces (Ultra- CATS) was designed with a focus on the semi-manual analysis of the ultrasound data with an added automatic tracking option. The first goal of the software was to allow the user to do a convenient half-manual analysis of an image sequence. While the software makes all the measurements of the tongue surface, the user decides in the half- manual analysis where the measurements will be taken. The second goal was to allow the user an easy on-line manipulation of an automatic image- processing algorithm. The automatic tracker can be set, run, stopped, corrected and set back on track at any point during the analysis. The Ultra- CATS program saves all measurements to a Comma delimited text file so that they can be edited and analyzed using a spreadsheet editor or a statistical analysis program.

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