

Redesigning the GUI for the HLsyn Speech Synthesizer

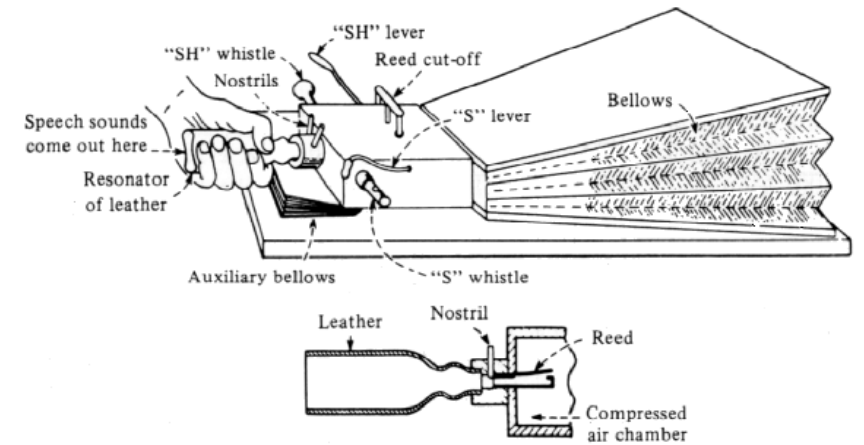
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ADVISOR: PROFESSOR HANSON



Introduction

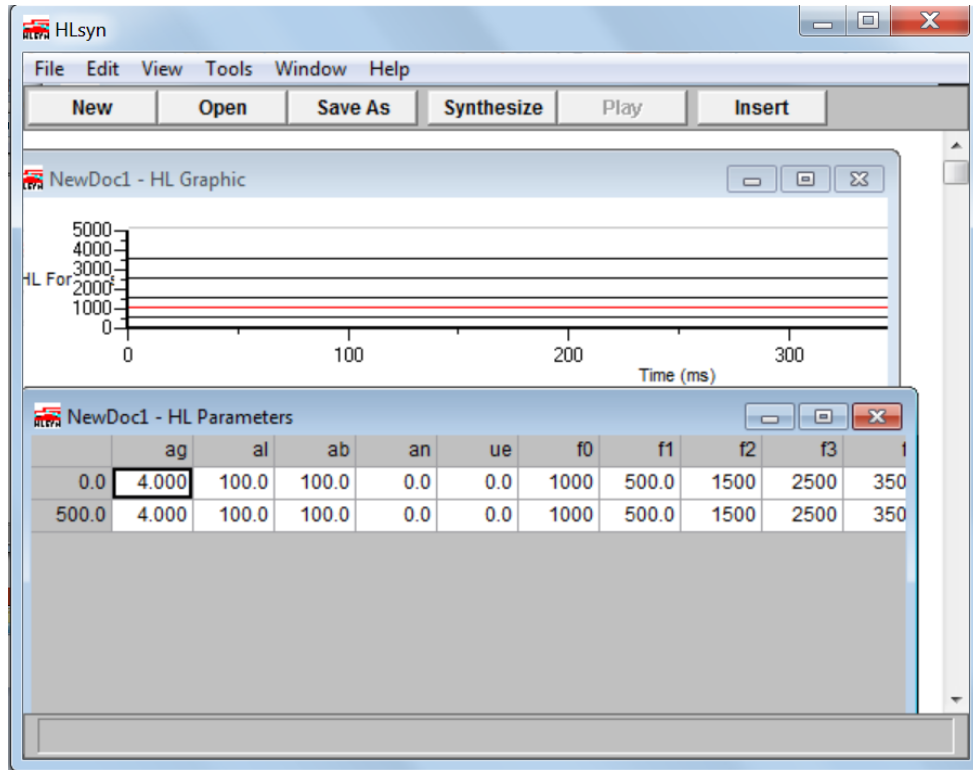
- Before there were electronic and software synthesizers, mechanical synthesizers existed in the late 1700's
- HLsyn is a software based speech synthesizer developed by Sensimetrics Corporation in the 1990's
- It synthesizes speech by inputting data as high level speech parameters



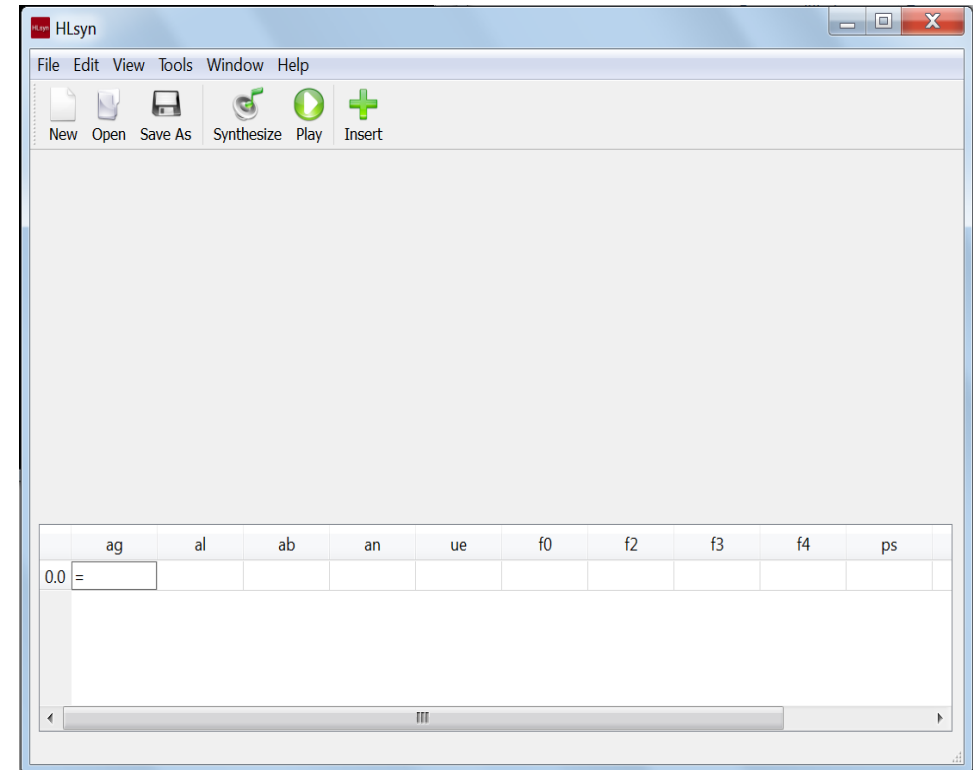
Goals and Performance Criteria

Function/Goal	Status
Update GUI to use modern windowing toolkit	COMPLETE
Enable Support on latest version of Windows	COMPLETE
Cross-platform support for latest version of Mac OS	COMPLETE*
Allow users to draw data in as graphs	COMPLETE*
Connect backend of HLsyn to new GUI	IN PROGRESS

The Main GUI



Old GUI



New GUI

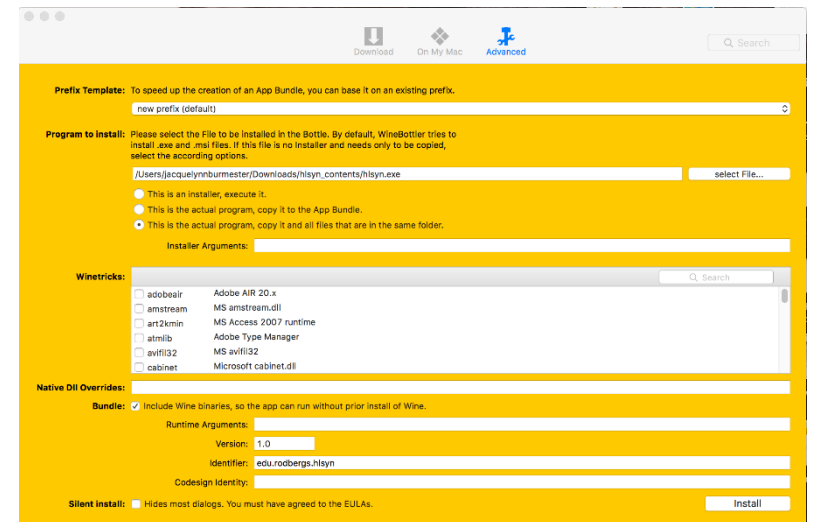
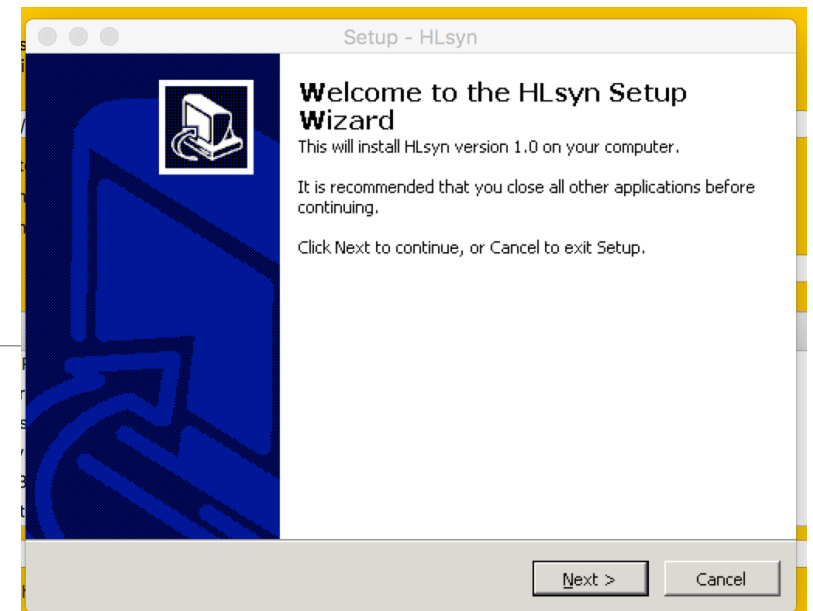
The Main GUI (Continued)

- The old GUI had several issues including overlapping windows, and harsher visuals that weren't inviting to the user
- The new GUI features larger visual buttons, movable toolbars, and no overlapping windows
- Implemented using Qt framework version 5.7 and is written in C++



Cross Platform Support

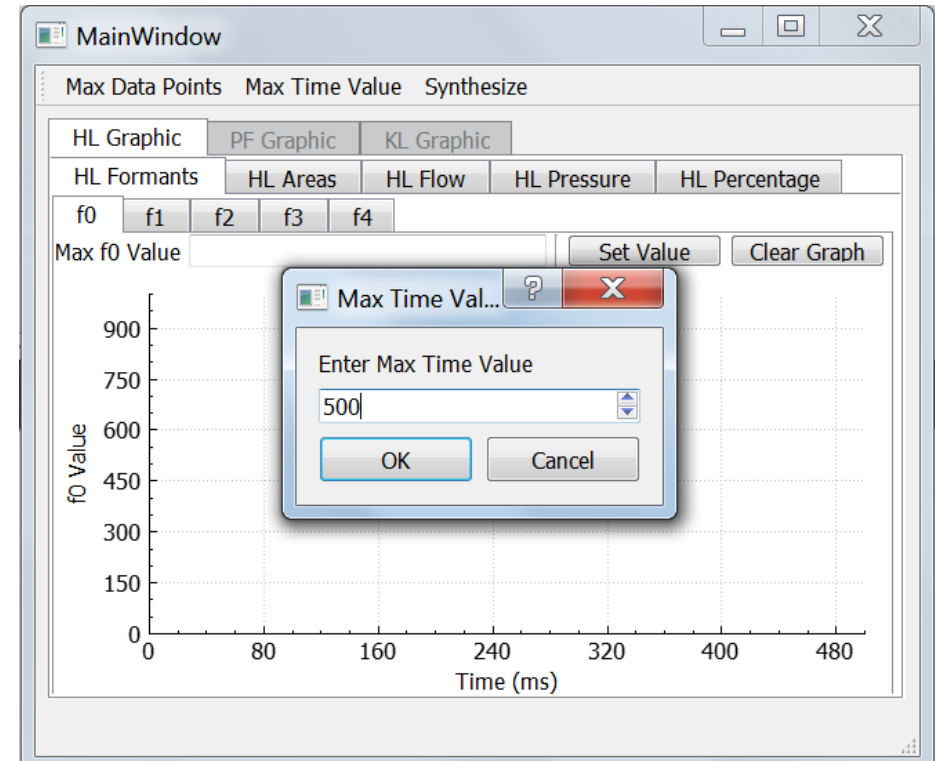
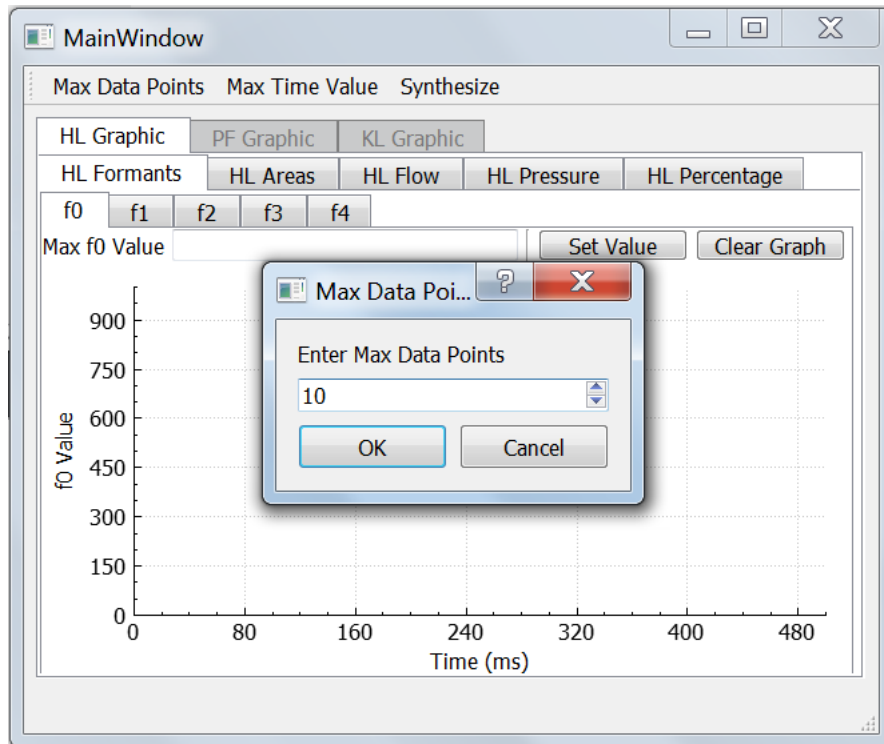
- Ability to run on both the latest version of Microsoft Windows (Windows 10) and Mac OS (Sierra 10.12)
- Native support on Windows application is easily installed using standard .EXE installer
- Mac OS support uses WINE compatibility layer and WineBottler to create installable .app package



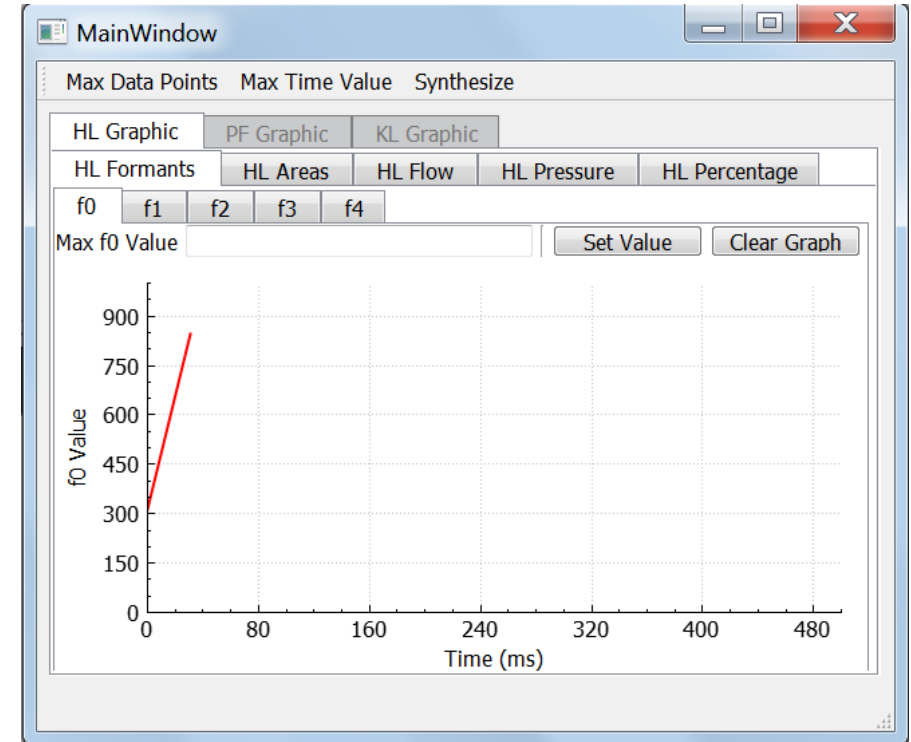
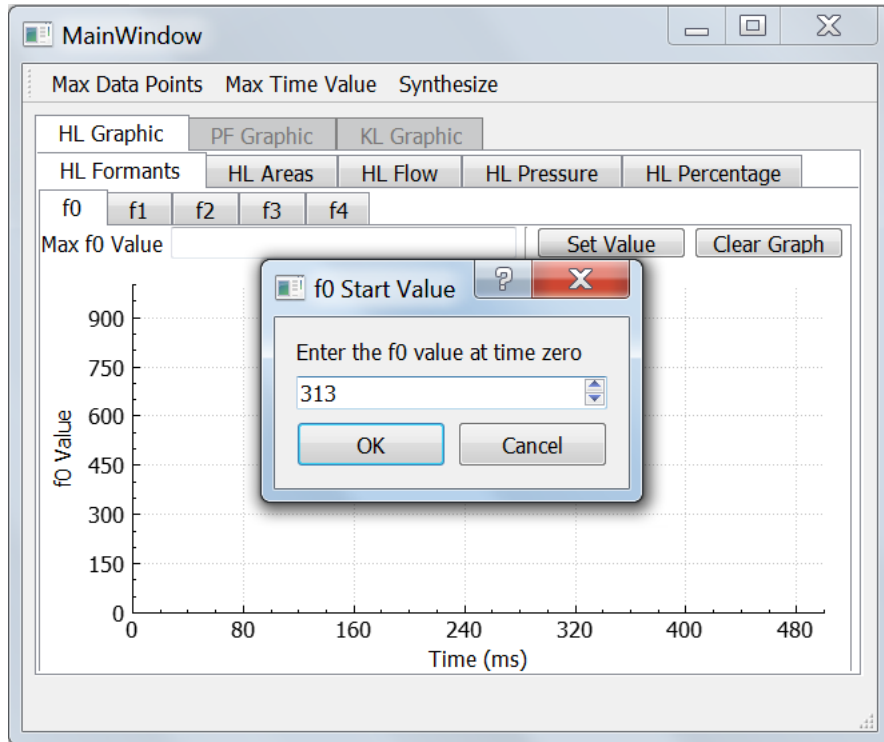
Input Data by Drawing Graphs

- Allows user to draw a graph representing data for the various high level speech parameters
- Each speech parameter is drawn on its own separate graph
- After user has drawn all of the desired data, they can choose to display the data in table form
- User will be able to submit the data generated to the backend of Hlsyn (in progress)

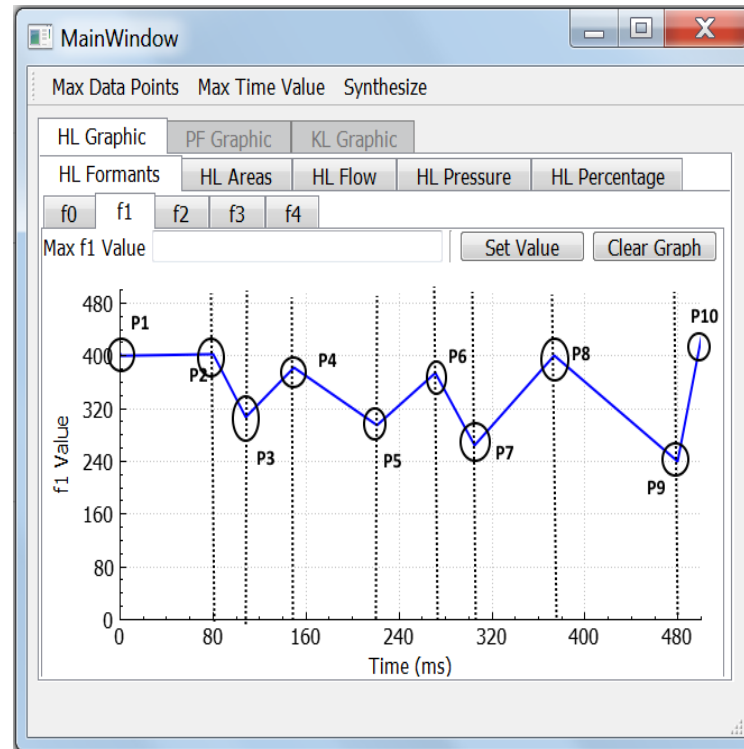
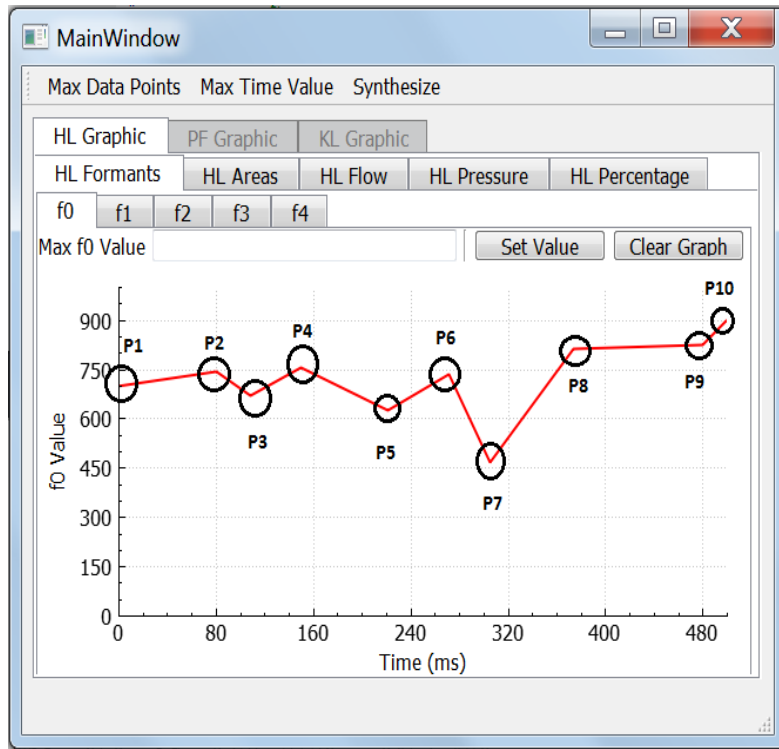
Entering Data As Graphs (Procedure)



Drawing Data In As Graphs (Procedure)



Drawing Data In As Graphs (Procedure)



f0 plot clicked

The "0" is "0" , "700"

The "1" is "80.1158" , "743.902"

The "2" is "108.108" , "670.732"

The "3" is "149.614" , "756.098"

The "4" is "221.042" , "626.016"

The "5" is "271.236" , "735.772"

The "6" is "305.019" , "467.48"

The "7" is "373.552" , "813.008"

The "8" is "479.73" , "825.203"

The "9" is "500" , "900"

f0 replotted

Results vs. Performance Criteria

- Updating GUI look and feel was successful as was utilizing the Qt framework
- Cross platform support without need for WINE and Winebottler
- Drawing data method works as expected, but can be improved to remove occasional glitches and better representation of inputted data
- Overcoming the obstacles of connecting the current backend of HLsyn to the new GUI frontend of HLsyn

Conclusions and Future Work

- Ability for user to save graphs and tables that they are drawing
- More visual feedback to allow users to see time values of previous graphs when drawing
- Log system or debug console that will allow the user to see information messages as they work to better understand workflow
- Single standalone application that can work seamlessly on Windows, Mac OS, and Linux
- Mobile version for Android

Acknowledgments

Matt Anderson for helping in understanding back end code

Sensimetrics Corporation for allowing us to use source code

Questions?