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Analyzing Spoken Dialogue and Pupil Diameter on a Multi-Touch Surface

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Problem

- The analysis of large amounts of post experimentation data is a time consuming and tedious task.
- Current tools (DialogueView, Wavesurfer) do not provide the necessary tools to analyze certain datasets



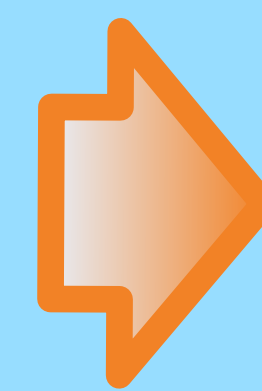
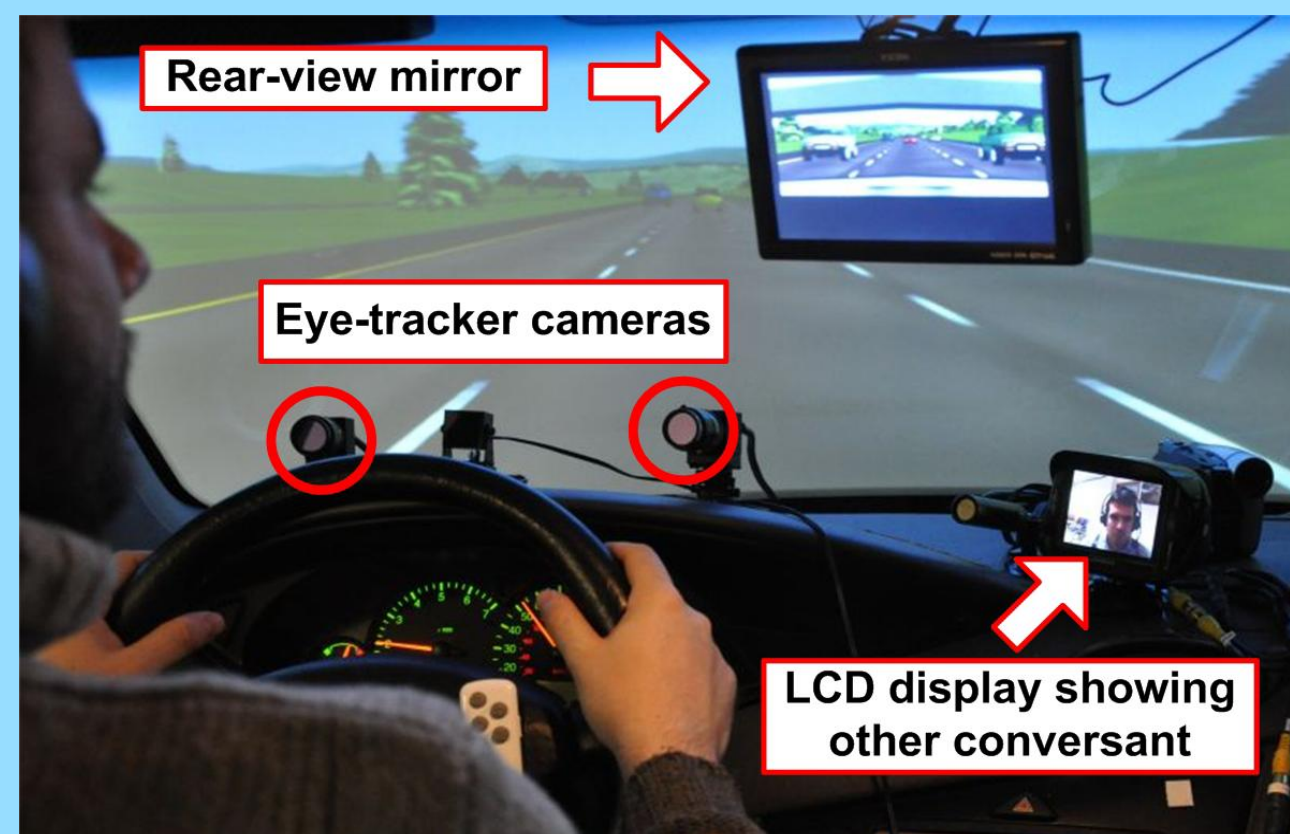
Goal

- Create a tool that will help researchers analyze spoken dialogue and pupil diameter
- Utilize the intuitiveness of Multi-Touch screen devices to create a more user-friendly product

Approach

Original Experiment

- Driver and conversant engage in game of Taboo
- Effects of conversation on driver's cognitive load

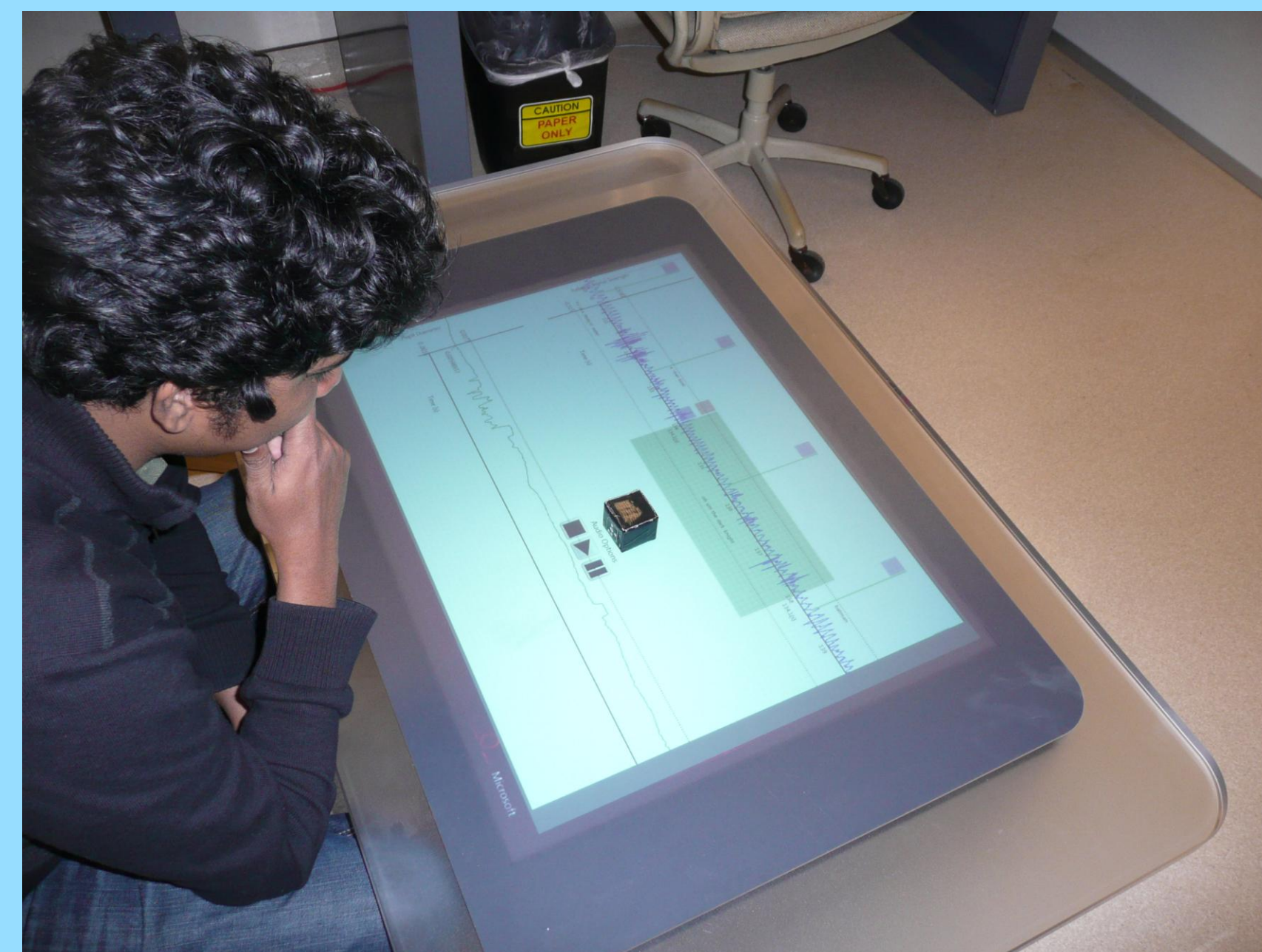


Data

- Dialogue (audio)
- Transcribed dialogue (text)
- Pupil Diameter measurements



Microsoft Surface v1.0



Tool Specifications

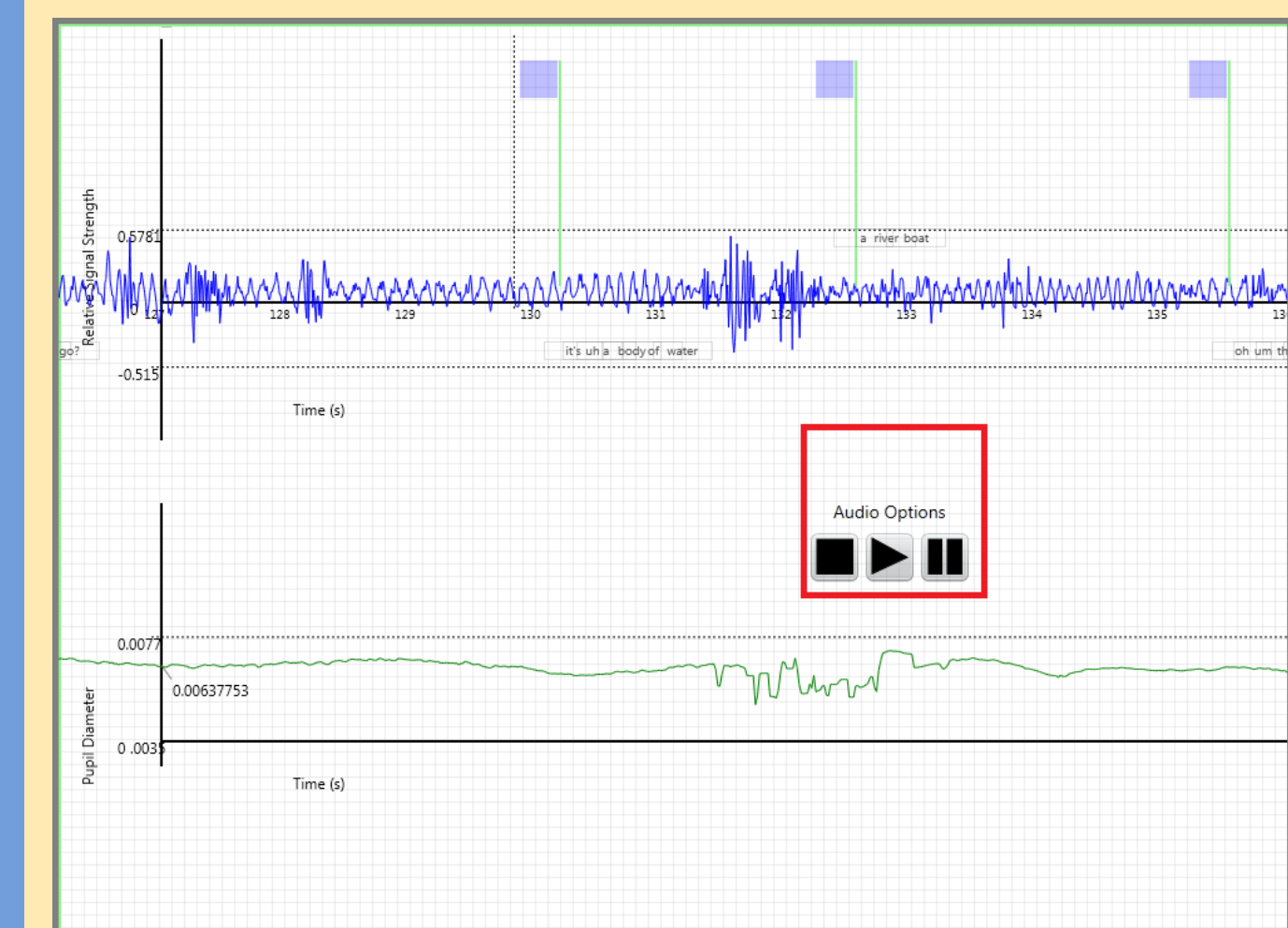
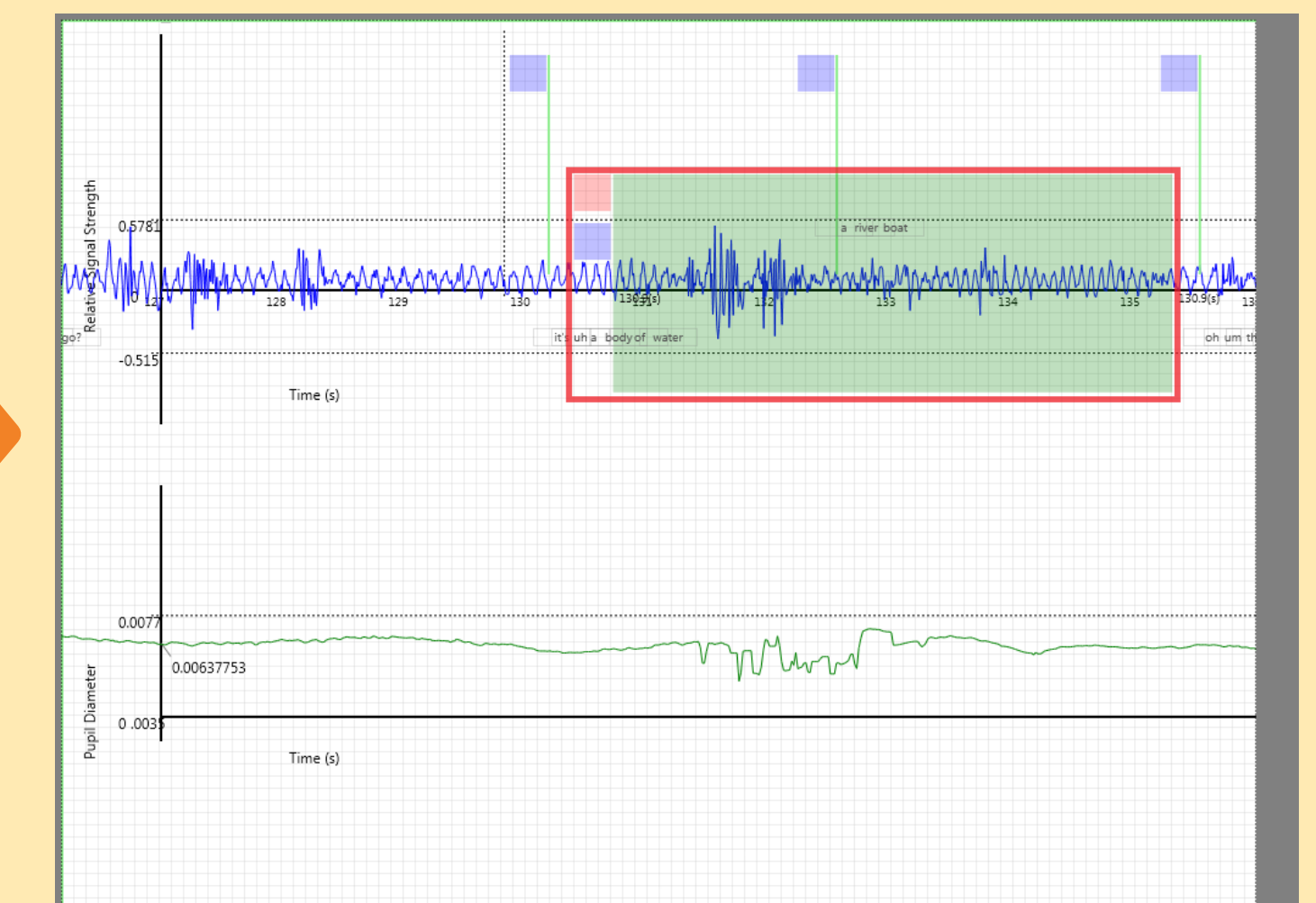
- Visualize the sound file associated with the Taboo game as well as the pupil diameter measurements
- Play/Pause/Stop the sound file
- Display the transcribed dialogue along the visualization
- Edit/Create new phrases in the transcription
- Find correlations between speech and pupil diameter

Results

Gesture Recognition

Highlight Gesture:

- Use two fingers to highlight an area
- Area can then be used for a list of functions



Tagged Visualizations

- Use of byte tags to display specific interfaces
- Conserves space for better analysis

Perform Correlation

- Use xcorr function from MatLab to perform cross correlation on data



Future Work

- Add more MatLab functionality to make this tool more robust and useful
- Run user testing for quality assurance as well as user suggestions
- Perform user experiments to compare the tool's functionality to more standard methods of analysis

Acknowledgements

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Video of analysis tool:

