Synthotron

Live Music Performance with Android

18-551 Spring 2014 Capstone Project

Michael Nye (mnye), Michael Ryan (mer1)

The Problem

Music performance applications on Android are virtually non-existent. Part of this problem is that historically, Android has not had good audio or touch latency, and music applications require very low latency to feel responsive. Modern Android versions have latency on the order of 100-150 ms. While this isn't yet low enough for a traditional keyboard-like interface, it is low enough to allow for performance aspects with an appropriate interface, with CD-quality audio (44.1kHz, 16-bit samples) in real-time.

References

[1] `https://play.google.com/store/apps/details?id=com.singlecellsoftware.caustic`

[2] `https://github.com/thenyeguy/ClickTrack`

[3] `http://www.khronos.org/opensles/`

Final Work Breakdown

Week 1 (Feb 16 - Feb 22)	Initial proposal and presentation Feb 18 Experiment with Android audio latency Feb 22
Week 2 (Feb 23 - Mar 2)	Nye - Begin porting ClickTrack to Android Ryan - Develop barebones sequencer, piano roll, or keyboard interface on Android
Week 3 (Mar 9 - Mar 15)	Spring break!
Week 4 (Mar 16 - Mar 22)	Nye - ClickTrack functionality on Android Ryan - Combine interface with ported audio production
Week 5 (Mar 23 - Mar 29)	Nye - Finish port of ClickTrack with Java interface Ryan - Refactor and make robust interface
Week 6 (Mar 30 - Apr 5)	**Updates** Begin expanding functionality for additional instruments and effects
Week 7 (Apr 6 - Apr 12)	Continue expanding functionality
Week 8 (Apr 13 - Apr 19)	Continue expanding functionality. Spectrum and envelope visualization tools
Week 9 (Apr 20 - Apr 26)	Nye - Additional effects and cleanup of audio engine Ryan - Additional effects and cleanup of interface
Week 10 (Apr 27 - May 3)	Completed project and working demo
Week 11 (May 4 - May 11)	Final report