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Review: "Designing Smule's iPhone Ocarina" by Ge Wang and "Stanford Laptop Orchestra (SLOrk)" by Ge Wang, Nicholas Bryan, Jieun Oh, and Rob Hamilton

These two papers give an overview to two projects led by Professor Ge Wang from Stanford University. One project is the Smule Ocarina, and iPhone app. The other project is the Stanford Laptop Orchestra which is taught as a course at Stanford and explores the use of computers and electronic devices in creating a music experience.

The Ocarina app for the iPhone is a publicly available app. This simple to use wind instrument generates different pitches based on which holes in the instrument are covered. This instrument is simulated on the iPhone using the Chuck audio engine, implemented for the iPhone. To control the instrument the ocarina app needs to receive information on blowing strength and finger placement. This is done using iPhone's touch screen to simulate covering the ocarina holes and the microphone to detect a user blowing "into" the device. The ocarina also uses the accelerometers in the device to detect tilt and uses that information to modify expressive features of the generated sound. Using all of these features, the app gives an experience that is very similar to playing the actual instrument.

Another component of the app uses the phone's GPS and internet capabilities. The app provides a way to generate music using a virtual ocarina, but it also records and shares the music in an anonymous fashion. Every piece is recorded, given a location based on the GPS coordinates and uploaded to a centralized server that other users can access to see what is being played and where it is being played. This application is also backed by an online community. The community allows sharing of scores for the app as a series of images depicting what holes should be covered. The paper reports that over 1200 scores have been shared in this way. Combining the physical experience of playing the ocarina app and the community features seems to make the Smule Ocarina a compelling app as it has been used on over a million different iPhones.

The second paper describes the Stanford Laptop Orchestra or SLOrk. This article gives details on the creation of the laptop instruments and gives an overview of performances that have been done by the orchestra. This orchestra is composed of students who participate in the multidisciplinary course designed around it. The tasks required to start the orchestra involved acquiring and assembling the equipment required. The equipment required involves MacBook laptops, wireless equipment for synchronization, custom speaker boxes, and the firewire audio interfaces to drive the speakers. The SLOrk uses a custom speaker to play music. It is constructed from 6 car speakers and a built in amplifier mounded into a wooden hemisphere. The laptop orchestra may also use different interfaces such as MIDI instruments, joysticks and other human interface devices for controlling the instrument's program.

Primarily the orchestra uses the Chuck software to generate the sounds and create different instruments for performance. Using this software, or any software developed by students participating in the orchestra, the students can experiment with, and generate music in real time. For future work, the author is exploring the use of mobile devices in the same way as the laptops.

## References

Wang, Ge "Designing Smule's iPhone Ocarina." In Proceedings of International Computer Music Conference, Pittsburgh, PA. 2009

Wang, G., N. Bryan, J. Oh, and R. Hamilton. "Stanford Laptop Orchestra (SLOrk)." In Proceedings of the International Computer Music Conference, Montreal, 2009.