

### **Stanford Mobile Phone Orchestra (MoPhO)**

The Stanford Mobile Phone Orchestra (MoPhO) is a new repertoire-based ensemble using mobile devices (e.g., iPhones) as the primary musical instrument platform. Far beyond ring-tones, MoPhO's interactive musical works take advantage of the unique technological capabilities of today's hardware and software, transforming multi-touch screens, built-in accelerometers, built-in microphones, GPS, data networks, and computation into powerful and yet mobile chamber meta-instruments. MoPhO was instantiated in 2007 at CCRMA, Stanford University, by faculty member Ge Wang, Deutsche Telekom senior research scientist (now faculty at University of Michigan) Georg Essl, and visiting CCRMA researcher Henri Penttinen, with CCRMA Artistic Coordinator Chryssie Nanou, 2007-2008 MA/MST students, and generous initial support from Nokia. Our mission: to explore new possibilities for music-making for everyone, leveraging pervasive, everyday computing technology.

#### **Nicholas J. Bryan**

Nick Bryan is a PhD student at the Center for Computer Research in Music and Acoustics (CCRMA) at Stanford University working with Prof. Ge Wang. Nick received a M.A. in music technology from Stanford (2008), B.M. in music engineering (2007), and B.S. in electrical engineering with highest honors summa cum laude at the University of Miami, FL (2007).

#### **Luke Dahl**

Luke Dahl is a computer musician and PhD student in Computer Music at CCRMA, where he conducts research in new musical instruments and ensembles, musical gesture, and music information retrieval. He has composed works for the Stanford Laptop Orchestra (SLOrk) and Stanford Mobile Phone Orchestra (MoPhO.) He also creates and performs dance-based forms of electronic music.

#### **Jorge Herrera**

Jorge is a PhD student at CCRMA, working with the Music, Computing and Design group directed by Professor Ge Wang. He earned a BS and MS in Electrical Engineering from Universidad Catolica de Chile and recently he finished the MA/MST at CCRMA. Over the last few years he has worked in web application development for different industries. Two years ago he decided to make computer music research the main subject of his professional life. His interests at CCRMA are interactive systems for computer music and, more generally, social music.

#### **Jieun Oh**

Jieun Oh received her Bachelor of Science in Symbolic Systems at Stanford University in 2008, focusing in computer music. She is currently a PhD student at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), conducting research in new music-making paradigms (laptop and mobile phone ensembles), music cognition, sonification/visualization, and, more broadly, how music and technology change the way people interact. Jieun has been playing flute for 13 years and was a member of the Stanford Symphony Orchestra (2004-2008) and the Stanford Wind Ensemble (2005-2006). She was the recipient of the Humanities and Sciences Undergraduate Prize in Music Performance in 2007 and 2008. Presently, Jieun co-directs the Stanford Laptop Orchestra (SLOrk) and the Stanford Mobile Phone Orchestra (MoPhO).

#### **Spencer Salazar**

Spencer Salazar is a software engineer, music technologist, and composer from San Francisco. A cohort of the Princeton SoundLab, he is the chief developer of miniAudicle, an integrated development environment for the Chuck audio programming language. He has implemented several components of Chuck proper, and has composed for, performed in, and developed software for the Princeton and Stanford Laptop Orchestras and, more recently, the Stanford Mobile Phone Orchestra. After earning a B.S. in Computer Science at Princeton University, Spencer worked on prototyping human-computer interface technologies at MOTO Group. Since Summer 2008, Spencer has served as software architect and designer at Smule, and helped to create every Smule iPhone app to date.

#### **Ge Wang**

Ge Wang is an Assistant Professor at Stanford University in the Center for Computer Research in Music and Acoustics (CCRMA), and conducts research in interactive software systems for computer music, programming languages, mobile music, and education at the intersection of computer science and music. Ge is the author of the Chuck audio programming language, the founder and director of the Stanford Laptop Orchestra (SLOrk), and of the Stanford Mobile Phone Orchestra (MoPhO). Ge is Co-founder, CTO, and Chief Creative Officer of Smule, and the designer of the iPhone's Ocarina, and Leaf Trombone: World Stage.

## Stanford Mobile Phone Orchestra (**MoPhO**)

*presents*

# i, MoPhO: Music for iPhones

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*ensemble*

Nick Bryan  
Luke Dahl  
Rob Hamilton  
Jorge Herrera  
Turner Kirk  
Jieun Oh  
Spencer Salazar  
Ge Wang



8pm, Thursday, December 3rd, 2009  
CCRMA Stage, Stanford University

**STANFORD UNIVERSITY**

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Center for Computer Research in Music and Acoustics (CCRMA)  
Department of Music

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<http://mopho.stanford.edu/>

## Program

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### **IntraV: a tale in two parts**

Jorge Herrera

### **Wind Chimes**

Nick Bryan

### **Vox Aeterna**

Ge Wang

### **Colorful Gathering**

Jieun Oh

### **Non-specific Non-gamelan**

Ge Wang

### **Mo So(und) Bo(unce)**

Luke Dahl

### **Save Room**

Spencer Salazar

### **Dots + Lines**

Ge Wang

### **Touch Patterns**

Nick Bryan

## Notes

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### **IntraV: a tale in two parts** | Jorge Herrera

interV is an instrument that at any given time plays only two notes (an interval). The intensity of each note is controlled independently by the horizontal and vertical acceleration of the iPhone. IntraV explores the possibilities offered by this instrument in a network environment, where the intervals played by different phones are coordinated by a central server.

### **Wind Chimes** | Nick Bryan

Taking advantage of the onboard compass and microphone, prerecorded sounds are controlled via a performer's breath and physical direction. The interaction allows the performers to act as the wind and control the slowly evolving sounds in complete surround sound.

### **Vox Aeterna** | Ge Wang

A piece for voice, iPhone, Auto-Tune (via Smule's *I Am T-Pain*), and a MoPhO instrument called Fx, Vox Aeterna explores voices both human and augmented in a series of auto-tuning meditations.

### **Colorful Gathering: a 5-mvt piece using the ColorsV instrument** | Jieun Oh

ColorsV is a touch-based instrument that leverages the iPhone's multi-touch interface. Performers control the pitch and volume of up to five sinusoidal sound sources by touching and moving their fingers across the screen. Performers may specify the frequency range and decay rate of their instruments, as well as toggle between discrete-frequency (i.e. pitch snaps to a note) and continuous-frequency (pitch changes smoothly) modes. Colorful Gathering is comprised of 5 movements:

- I. Converge: ultimate convergence to C dominant 7th chord
- II. Telephone+: chain of imitated gestures
- III. Characters: character conversations with fellow performers
- IV. Jam: a lively rhythmic jam session
- V. Diverge: divergence away from C

### **Non-specific Non-gamelan** | Ge Wang

This piece is an experiment in human controlled, iPhone-synchronized mobile percussion ensemble performance. Various percussive sounds are temporally positioned by MoPhO members, and the piece gradually transitions from tuned bell timbres to drums as the texture and density grows. This is an evolution of Perry Cook and Ge Wang's Non-specific Gamelan Taiko Fusion for laptop orchestra, with a few mobile twists...

### **Mo So(und) Bo(unce)** | Luke Dahl

This piece uses the idea of a bouncing ball as a metaphor to structure the performers' interactions both with the instrument and with each other. The sound is controlled by a virtual ball that can be bounced, dropped, or thrown to other players. The piece ends with a game in which players attempt to knock out other players' sounds. SoundBounce was premiered this spring by the Stanford Laptop Orchestra (SLOrk), and has been ported and modified for Mobile Phone Orchestra.

### **Save Room** | Spencer Salazar

"Save Room" is a follow-up to a piece originally composed on a Nintendo DSi. While experimenting with the DSi's built-in audio processing software, Spencer was intrigued by the rich musical landscape that could be created with its relatively simple functionality. Using iPhone software inspired by the DSi, "Save Room" attempts to further develop that landscape in an ensemble setting. Special thanks to Turner Kirk and Ge Wang for their thoughts and insights in developing this work.

### **Dots + Lines** | Ge Wang

A 3-dimensional sprinkling of dots (via Brian Eno and Peter Chilvers's *Bloom*) and a few lines (via Smule's *Ocarina*) provide the ingredients for a mobile ambient soundscape.

### **Touch Patterns** | Nick Bryan

Based on simple repeating patterns, Touch Patterns uses the iPhone's touch screen to play and record a performer's rhythm. The pitch is then controlled via the device's accelerometer while the patterns are visualized in a collage of pulsing colored squares.