

# Datebook

At the car wash: Drivers come clean about vehicular love **E3**

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## MUSIC



Photos by David Paul Morris / Special to The Chronicle

Director Ge Wang helps co-director Jienun Oh reset a computer — the screen is seen below — at the Stanford music center.

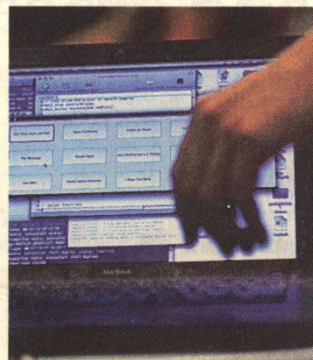
## Stanford's orchestra of laptops

By Joshua Kosman  
CHRONICLE MUSIC CRITIC

In a practice room on the Stanford campus last week, an ensemble of more than a dozen performing musicians gathered to rehearse for an upcoming chamber concert of student work. One young composer after another stepped to the front of the room, distributed scores, and started cueing entrances and ironing out details of coordination.

Just another day in the chamber-music world, except for one key detail: Every musician in this ensemble was playing the same instrument — a MacBook.

You've now entered the world of Slork, one of various high-tech musical projects under way at CCRMA, Stanford's Center for Computer Research in Music



**Slork:** The Stanford Laptop Orchestra's Spring Concert is at 8 p.m. Wednesday at Dinkelspiel Auditorium, Stanford. Free. [slork.stanford.edu](http://slork.stanford.edu).

and Acoustics. The name — an acronym for Stanford Laptop Orchestra — describes the parameters of the thing with crisp efficiency, but it doesn't quite convey the range and variety of sounds that emerge from this computerized confab.

Among the works featured on Wednesday's spring concert are the burbles and bleeps of old-style electronic music, the sounds of traditional instruments (both real and synthesized) and much in between.

One composer, Marisol Jimenez, has created an array  
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# Making music on Macs

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of something she calls “noise harps,” each one a bell-shaped apparatus strung with amplified wire to be played with a violin bow. Chris Chafe, the head of CCRMA, will present a piece that combines laptops in the concert hall with live musicians offsite.

Slork is run by Ge Wang, 32, an affable, caffeinated professor with a joint appointment in the music and computer science departments.

“What we’re exploring here is how computers can be made into new types of musical instruments,” he said. “We want to make orchestra and chamber music with these new sounds, and try to figure out how to connect people and machines musically.”

Wang, who came to the United States from Beijing when he was 9, started Slork when he joined the Stanford faculty in 2007. It’s modeled on an ensemble he participated in as a graduate student at Princeton, called — you guessed it — Plork.

## Best of computers, people

The impetus behind it seems to owe as much to ideas in cognitive science as in music, Wang says. “One of the basic questions we’re asking is, What are computers good at doing and what are people good at?”

“Computers are great at producing sounds — anything we can write an algorithm for, we can hear. They don’t get tired, they have a lot of processing power, and they’re easily networked.

“People, on the other hand, are adaptable. They’re social. The notions of expressiveness and intention more readily applicable to people.



David Paul Morris / Special to The Chronicle

**Members of the Stanford Laptop Orchestra rehearse with their MacBooks at the university’s computer music center.**

**“We want to ... try to figure out how to connect people and machines musically.”**

*Ge Wang, head of Stanford Center for Computer Research in Music and Acoustics*

“You pull all these elements together, and then you see where the intersection is.”

But why use an array of laptops to produce sounds that could easily be made to come from a single machine? One reason, Wang says, is the spatial aspect.

Rather than routing all the sounds of the ensemble through a single set of speakers, each Slork laptop is fitted out with its own six-channel hub of omnidirectional speakers. Just as in a traditional orchestra, the result is a blend of different sounds coming from distinct locations.

Another concern is the communal aspect of a group playing together. Members of Slork sit on cushions on the floor, with their laptops on low tables for better sightlines; the resulting aura is more like that of a gam-

elan than a computer lab.

“When a string quartet plays, they’re very visual,” says Wang. “If an ensemble has been together for a while, they know how to respond to each other, and that’s very much part of the performance. Computers aren’t so good at that aspect.”

## Orchestra of mobile phones

Slork is not the only electronic ensemble Wang oversees. He’s also founded MoPho, the Stanford Mobile Phone Orchestra — which, again, is just what it sounds like.

“MoPho is like a mobile version of Slork, which is an ensemble that has a large footprint. Whereas MoPho can rehearse and play anywhere, at any time.”

And more is probably to come. Wang waxes as enthusiastically as any early adopter about his new iPad, and promises to explore the musical possibilities of cloud computing.

“As Chris (Chafe) says, ‘If we knew what we were doing, it wouldn’t be research.’ This is all about taking the ill-defined into the realm of the well-defined.”

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