

## **UROP ad :: The Emonic Environment, Interactive Cinema Group, MIT Media Lab**

### **Summer 2004 – and beyond (pay/credit/magic)**

Hello there!

We (the people behind the Emonic Environment project) are looking for you to join our team.

#### **Summary (short version)**

The Emonic Environment project (EE) is looking to hire a UROP to work on a system for improvisational interaction (creating, interrelating and exchanging audio, video and text) based on genetic algorithms – with microphones, cameras, cell phones and sensors serving as input.

*Reqs:* strong (working-level) experience in Java and an infallible interest in creating systems for art and music creation and exchange. Contact info is at the bottom of the ad.

#### **The story (long version)**

##### *What is the Emonic Environment?*

The EE is designed to facilitate the real-time improvisational creation, arrangement, superimposition and interrelation of media (audio, video, text) as a solo venture or in collaboration with other users. It employs strategies based on emergence: the idea that via distributing information and slowly modifying parts of that distribution, interesting 'answers' will bring themselves forward, resulting in fluid and unexpected ontologies.

Its goal is to become an improvisational hub for musicians, filmmakers, poets, mixed media artists, DJs, bored students, or anyone else looking for an entertaining and powerful (yet accessible and intuitive) way of making music, creating/exchanging video on the fly, browsing news, and constructing something that is more than the sum of its parts.

##### *How does it work?*

The EE consists of two layers: (1) a continuously mutating recurrent (feeding back on itself) neural network, with genetic algorithms used to find suitable configurations of the network, and (2) processing engine allowing manipulation of audiovisual media in time and space as specified by the neural network layer. The user and the machine act as accomplices, creating, optimizing and modifying a dynamic system in both precise and 'overall' ways. Current version of the Emonic Environment, built over the course of the last 3 years, allows you to build networks of audio and video content, control them through a variety of input interfaces (sensors, microphones, cell phones, etc), contribute your own audio in realtime (recording/streaming/synthesizing), evolve between stored networks, exchange your networks with remote users of the Emonic Environment, and more. The plan for this summer includes (1) further developing methods for real-time user feedback to the genetic algorithms, (2) expanding audio synthesis and video manipulation capabilities, (3) analyzing and visualizing stats gathered from using the EE, and (4) expanding the cell-phone component of the EE. You get to pick the parts that you want to work on. The job requirements touch on all these and more.

##### *Are you looking for UROP monkeys?*

No. We would hate to have to tell you what to do. Rather, we welcome your input – from low-level design to high-level theory. Designing the actual implementation of a sub-problem is your creative domain (questions are more than welcome).

##### *Why is the Emonic Environment important?*

The overarching goal is making a tool for *improvisational* interaction – as opposed to the way we interact with computers today (that is, by using editors and browsers of various types which either force you to have a plan of what you gonna do or act as smarter-than-you black boxes diluting your decisions by having a ‘mind of their own’ to which you have no access).

Getting such improvisational paradigm right means opening new ways for interacting with computers – be it creating an on-stage performance, exploring the net, sharing your news with friends, or using your cell phone. In EE you don't need a plan or a set of goals in order to express yourself, produce art, and have fun. You do have to have the skills of a critic, one that does not necessarily know how to create the core materials yet has a good sense of what does (not) make sense when put together or in juxtaposition with something else.

To sum it up, the Emonic Environment is an experiment in making a media system that can lead people to explore media spaces in unique ways, unlike what they'd consciously do. How exactly? Join us in finding out, while creating unconventional music and art along the way.

*What do I get?*

- You will learn a lot and get to develop your own ideas. It is such a cliché phrase, but talk to the current and previous UROPs and see for yourself.
- You get to think about the nature of creative processes and create an environment full of music and visuals, and used by real people in situations ranging from individual users to electronic music performers to visitors at a world-famous art exhibition center.
- You will do independent research, develop theories, coauthor papers\*, and present your work at a variety of venues (recent UROPs presented at conferences in the UK, developed and installed a version of the system in Centre Pompidou in Paris, etc).
- It is fun to work here and your ideas are important for real. That ain't a soldering UROP (it's really not much of a job as such; more like it becomes your life for better or for worse)\*\*.

\* Check the project webpage to see the recent UROP-coauthored papers.

\*\* To talk to recent UROPs, feel free to inquire at the address below and we'll arrange it.

*What do I have to know?*

The system is a media system for improvisational interaction, performance, and control of audiovisual media in a variety of contexts (on-screen/mobile/sensors) and driven by genetic algorithms – and that's why the requirements are diverse. Don't take it wrong; we don't expect you to know all of the following. You do have to have a working level experience in Java; a good foundation in at least one of the reqs listed below; and a motivation to learn fast.

- Swing & network programming in Java.
- Evolutionary algorithms / neural nets.
- J2ME (or knowledge of Symbian C).
- QTJava/OpenGL.

Knowledge of or strong interest in audio synthesis, music & video improvisation / composition, genetic computation, anthropology, media theory and cognitive science – a plus.

**For more info:**

Email: [pauln@media.mit.edu](mailto:pauln@media.mit.edu)

This ad: <http://web.media.mit.edu/~pauln/research/emonic/urop-ad.pdf>

Emonic Environment homepage: <http://web.media.mit.edu/~pauln/research/emonic>