

*The University of Alabama  
Department of Computer Science  
Colloquium Series Speaker*

**Deborah Duong  
Object Sciences Corporation**

## **"Symbolic Interactionist Modeling"**

**Friday, March 11<sup>th</sup>  
11:00 a.m., HO 108**

### **Abstract:**

Dr. Duong will present her work on Symbolic Interactionist Modeling. Symbolic Interactionist Modeling seeks to capture the fundamental social process by which a system of upper level institutions emerges from lower level symbolic interaction. Agents develop a consensus on institutions and language on the macro level by inducing the signs that they display and read based on economic payoff on the micro level. Knowledge in these simulations is held socially, distributed in the expectations agents have of each other based on these emergent signs. Symbolic Interactionist Modeling is based on sociological theory, and addresses how emergence should happen in general, according to sociological principles, and not just how emergence happens in particular cases. It is used both for theory support in social science and as a methodology of distributed artificial intelligence.

Dr. Duong will present her 1991 model based on co-adapting neural networks, in which prejudice, status symbols and racial class emerge (see <http://www.scs.gmu.edu/~dduong/behavioralScience.pdf>). This has been called the world's first agent based model of social science. She will also present SISTER, her model based on coevolving genetic algorithms, in which a role-based division of labor, price, money, and a symbol system emerge (see <http://jasss.soc.surrey.ac.uk/8/1/1.html>). She will discuss her work as a method of coevolution in multi agent systems, which solves many problems of DAI and evolutionary computation. She will also present potential applications of her models to many different areas including ecological modeling, urban planning, transportation and communication systems, robotics, data mining, and military command and control. She will include several projects that are currently funded by the military intelligence community.