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A brief summary of research interests:

As a Ph.D. candidate in the Department of Computer Science and Electrical Engineering at UMBC, I have worked on a number of exciting research projects in the area of mobile computing, ubiquitous and pervasive computing, mobile and electronic commerce, and software agents. As part of my doctoral research, I am investigating issues related to peer to peer collaborations in pervasive environments through the use of bartering and negotiation strategies. In the last four years, I have worked on several research projects, some of which are described below.

Under the advisement of Prof. Timothy Finin, Prof. Anupam Joshi, and Prof. Yelena Yesha, I participated in the design, development and implementation of the *Agent2Go* Project sponsored by NSF. This project attempts to solve problems related to location dependence that arise in a mobile electronic commerce environment. The *Agents2Go* framework allows users with mobile devices to retrieve information about businesses in their immediate geographical neighborhood. *Agents2Go* also allows businesses to dynamically update frequently changing information about their services. For example, a restaurant could dynamically update waiting times and send out promotions and discounts to attract additional customers. The following publications resulted from this work;

Olga Ratsimor, Vladimir Korolev, Anupam Joshi, and Timothy Finin, *Agents2Go: An Infrastructure for Location-Dependent Service Discovery in the Mobile Electronic Commerce Environment*, Paper, ACM Mobile Commerce Workshop, July 2001.

Tim Finin, Anupam Joshi, Lalana Kagal, **Olga Ratsimor**, Sasikanth Avancha, Vlad Korolev, Harry Chen, Filip Perich, R. Scott Cost, *Intelligent Agents for Mobile and Embedded Devices*, International Journal on Cooperative Information Systems, 2002. Preliminary version of the paper appeared in Fifth International Workshop Cooperative Information Agents, Modena, Italy, September, 2001.

I have also had a chance to work and collaborate with several students and my advisors on the *Allia* Project. This project explores alliance based service discovery in ad-hoc environments for devices with varying capabilities and policies. The *Allia* framework uses peer-to-peer caching and policy-driven agent/service discovery to facilitate cross-platform service discovery for an eCommerce environment. The following publications resulted from this work;

Olga Ratsimor, Dipanjan Chakraborty, Sovrin Tolia, Deepali Kushraj, Anugeetha Kunjithapatham, Gaurav Gupta, Anupam Joshi, Timothy Finin, *Allia: Alliance-based Service Discovery for Ad-Hoc Environments*, Paper, ACM Mobile Commerce Workshop, September, 2002.

Olga Ratsimor, Dipanjan Chakraborty, Anugeetha Kunjithapatham, Deepali Khushraj, Sovrin Tolia, Gaurav Gupta, Anupam Joshi, Timothy Finin, Yelena Yesha *Service Discovery in Agent-based Pervasive Computing Environments*, **Journal on Mobile Networking and Applications (MONET)**, Special issue on Mobile and Pervasive Commerce. 2003.

I worked on the *Numi* Project, a framework for collaborative mobile data management in infostation networks. Users with mobile devices (with limited memory capacity) move through geographical regions characterized by islands of cheap high-speed network connectivity (infostations) separated by regions of no network access. Users that meet in these areas of no network access can participate in ad-hoc collaboration with peers passing by. The *Numi* project aims to study the feasibility of using such peer nodes to carry data for a node that is currently in a region with no network access. Servers (on the infostations) predict users' needs and mobility patterns. Using this information, these servers utilize other devices (with spare capacity) moving in the appropriate direction to deliver needed data to users in need. The following publications resulted from this work;

Olga Ratsimor, Sethuram Balaji Kodeswaran, Anupam Joshi, Timothy Finin, Yelena Yesha, *Combining Infrastructure and Ad hoc Collaboration For Data Management in Mobile Wireless Networks*, Paper, ACM Workshop on "Ad-hoc Communications and Collaboration in Ubiquitous Computing Environments", November, 2002.

Sethuram Balaji Kodeswaran, **Olga Ratsimor**, Anupam Joshi, Timothy Finin, Yelena Yesha, *Numi: A Framework for Collaborative Data Management in a Network of InfoStations*, UMBC SRC, November 2002

Sethuram Balaji Kodeswaran, **Olga Ratsimor**, Anupam Joshi, Timothy Finin, Yelena Yesha, *Using Peer-to-Peer Data Routing for Infrastructure-based Wireless Networks*, IEEE International Conference on Pervasive Computing and Communications (**PerCom**), March 2003.

I also worked on the *eNcentive* project. *eNcentive* explored peer-to-peer marketing in m-commerce environments. In particular, I worked on the development and implementation of marketing schemes where mobile users collect various sales promotions, advertisements and discount coupons of small local businesses and redistribute them to other peer users. In return, participating businesses reward their most efficient distributors. I have implemented a prototype framework. The following publications resulted from this work;

Olga Ratsimor, Anupam Joshi, Timothy Finin, Yelena Yesha, *eNcentive: A Framework for Intelligent Marketing in Mobile Peer-To-Peer Environments*, The 5th International Conference on Electronic Commerce (**ICEC**), October 2003

Olga Ratsimor, Anupam Joshi, Timothy Finin, Yelena Yesha, *Intelligent Ad Hoc Marketing within Hotspot Networks*, Technical Report, Nov 2003

Currently, I am working on developing a bartering communication model that incentivizes collaborations in pervasive environments by supporting peer to peer bartering for digital goods, services and information. To demonstrate feasibility of my approach, I am developing a middleware framework that employs bartering protocols and strategies that are context sensitive and allow taking advantage of personal relationships that exist between the owners of the devices that operate in pervasive environments. I am also working on the development of value based service descriptions to express the perceived valuation of information and services in a personalized manner. My bartering model relies on personalized value based descriptions of goods and services to efficiently control information and services that leave and enter each device.