

Report Information				
Award Type	Award Number	Prime DUNS	Calendar Year / Quarter	Final Report
Grant	0947832	066470972	2010 / 3	No

Award Recipient Information	
Recipient DUNS Number 066470972	Recipient Address 1 107 SAMFORD HALL
Recipient Account Number 219043	Recipient Address 2
Recipient Congressional District 02	Recipient City AUBURN
Parent DUNS Number 066470972	Recipient State AL
Recipient Type 2U.95.G6.M8.OH.VW	Recipient ZIP Code + 4 368490001
Recipient Legal Name AUBURN UNIVERSITY	Recipient Country USA
Recipient DBA Name	

Project / Award Information	
Funding Agency Code 4900	Total Number of Sub Awards less than \$25,000/award 0
Awarding Agency Code 4900	Total Amount Sub Awards less than \$25,000/award 0.00
Program Source (TAS) Code 49-0101	Total Number of Sub Awards to Individuals 0
Sub Account Number for Program Source	Total Amount of Sub Awards to Individuals 0.00
CFDA Number 47.082	Total Number of Payments to Vendors less than \$25,000/award 0
Amount of Award 100000.00	Total Amount of Payments to Vendors less than \$25,000/award 0.00
Award Date 08/28/2009	
Award Description ECCS/PCAN/EAGER: Biologically Inspired Resource Harvesting in Mobile Wireless Networks - This research will provide techniques to harvest and manage two of the most important resources required by a wireless mobile device: energy and computing power.	

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Project Information

Project Name or Project/ Program Title	Activity Codes (NAICS or NTEE-NPC) (up to 10)
<p>Quarterly Activities/ Project Description ECCS/PCAN/EAGER: Biologically Inspired Resource Harvesting in Mobile Wireless Networks</p> <p>We are currently investigating a control theoretic approach to address resource allocation and mobility prediction in wireless networks. In the previous progress reports, we have addressed the issues such as mobility prediction through a Hidden Markov Model and a control theoretic approach for resource allocation.</p> <p>The model is generic and the HMM can be replaced by other prediction models as desired. We investigated the performance of a Multilayer Perceptron Neural Network model. The Neural Network model is compared to the HMM for performance. The prediction accuracies are almost the same the in case of the HMM for single AP movement. However, in predicting the longer sequence lengths (next n movements of a mobile user), the HMM performs better than the Neural model. Also, the model coefficient convergence times were found to be longer for the Neural Network model.</p> <p>In order to test the performance of our proposed computational model, we have implemented ABC's 'System Architecture', 'Tag Structure' as well as 'Ant Agents' in the popular network simulator, ns-2. To prove that many distributed applications can be written using Ant Agents, we implemented a simple user application belonging to the Bag-of-Tasks (BoT) paradigm. There are three reasons for choosing an application confirming to this paradigm. First, many</p>	<p>Activity Code 1 B43 - NTEE</p> <p>Activity Code 2</p> <p>Activity Code 3</p> <p>Activity Code 4</p> <p>Activity Code 5</p> <p>Activity Code 6</p> <p>Activity Code 7</p> <p>Activity Code 8</p> <p>Activity Code 9</p> <p>Activity Code 10</p>

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applications that fit this paradigm are highly computationally intensive and thus can benefit from cooperation from other devices in wireless ad-hoc networks. Second, an application following these paradigms can easily be divided into large number of coarse-grain tasks. Third, these tasks are highly asynchronous and self-contained and there is limited communication amongst the tasks. These three properties make the chosen paradigm suitable for execution in a networked environment

Project Status Completed 50% or more
Total Federal Amount ARRA Funds Received/ Invoiced 91839.71
Number of Jobs 0.52
Description of Jobs Created Faculty and Graduate Assistants
Total Federal Amount of ARRA Expenditure 90609.93
Total Federal ARRA Infrastructure Expenditure 0.00
Infrastructure Purpose and Rationale

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Infrastructure Contact

Name	Street Address 1
Email	Street Address 2
Phone	Street Address 3
Ext	City
	State
	ZIP Code + 4

Primary Place of Performance

Address 1	200 Broun Hall
Address 2	
City	Auburn University
Country Code	US
State	AL
ZIP Code + 4	36849 - 5201
Congressional District	03

Recipient Highly Compensated Officers

Prime Recipient Indication of Reporting Applicability	No	Officer 3 Name	
Officer 1 Name		Officer 3 Compensation	
Officer 1 Compensation		Officer 4 Name	
Officer 2 Name		Officer 4 Compensation	
Officer 2 Compensation		Officer 5 Name	
		Officer 5 Compensation	

Report Audit Trail

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