

Report Information				
Award Type	Award Number	Prime DUNS	Calendar Year / Quarter	Final Report
Grant	0947832	066470972	2010 / 1	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 A mobility prediction scheme was earlier proposed based on the Hidden Markov Model (HMM) to predict user locations in a mobile network. The model can be trained using previous movement data from wireless traces to predict user mobility. One of the goals of this project is to use bio-inspired learning models such as neural networks, ant colony optimization, etc to model prediction.</p> <p>Currently, we are investigating the complexity and real-time predictability of the HMM implementation. We are comparing it with a neural network implementation of a prediction model. We have modeled the neural network as a Multi Layer Perceptron (MLP) and as a Self Organized Feature Map (SOFM). It has been established that a single hidden layer is sufficient for an MLP network to learn all non-linearities present in input data (movement history) provided there is sufficient number of hidden nodes. Since data can be multi-dimensional, we plan to use an SOFM method to perform prediction. An SOFM helps in unsupervised learning and can be useful in recognizing trends (clusters) in data. This method has been adopted to investigate into the spatio-temporal correlation of mobility in users. This model can also be integrated into the previously proposed generic mobility prediction and resource allocation framework.</p> <p>Two publications resulted in</p>	<p>Activity Code 1 B43 - NTEE Activity Code 2 Activity Code 3 Activity Code 4 Activity Code 5 Activity Code 6 Activity Code 7 Activity Code 8 Activity Code 9 Activity Code 10</p>

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this quarter. Journal versions are being prepared from the mobility prediction work.

Project Status Less than 50% completed
Total Federal Amount ARRA Funds Received/ Invoiced 20074.70
Number of Jobs 0.67
Description of Jobs Created Graduate Assistants
Total Federal Amount of ARRA Expenditure 23522.74
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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