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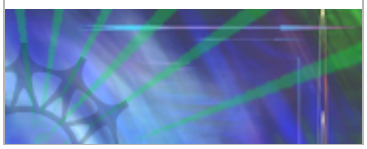

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Award Abstract #0958436

CRI/II-New: Dallas-ARea Testbed for Context-Aware, Cognitive Research (DART-CARs)

NSF Org:	CNS Division of Computer and Network Systems
Initial Amendment Date:	February 24, 2010
Latest Amendment Date:	April 4, 2011
Award Number:	0958436
Award Instrument:	Continuing grant
Program Manager:	Theodore Baker CNS Division of Computer and Network Systems CSE Directorate for Computer & Information Science & Engineering
Start Date:	March 1, 2010
Expires:	February 29, 2012 (Estimated)
Awarded Amount to Date:	$435000
Investigator(s):	Joseph Camp camp@lyle.smu.edu (Principal Investigator) Dinesh Rajan (Co-Principal Investigator)
Sponsor:	Southern Methodist University 6425 BOAZ DALLAS, TX 75205 214/692-2000
NSF Program(s):	COMPUTING RES INFRASTRUCTURE
Field Application(s):	
Program Reference Code(s):	HPCC, 9218
Program Element Code(s):	7359

ABSTRACT

Wireless system performance is known to be highly dependent upon the characteristics of the environment. Despite the increasing ability of wireless devices to sense their surroundings, wireless systems have yet to fully leverage contextual data to improve performance. To this end, the Dallas-ARea Testbed for Context-Aware, Cognitive

Research (DART-CARs) allows the study of wireless performance in a broad class of mobile and static environments from indoor labs to outdoor high-way speeds within a single testbed. Our hardware platform functions across many different wireless bands to enable real-time, multi-band operation. Such a first-of-its-kind infrastructure is critical for designing context-aware and cognitive algorithms that utilize multiple frequency bands to adapt to dynamic environmental settings. Our project has three major

initiatives:

-Deploy a wireless research testbed to enable study across a vast array of urban environments

-Design multi-band wireless hardware and reconfigurable embedded software tools that enable context-driven, cognitive switching across frequency bands to improve performance in the aforementioned environments

-Develop an open-access data repository of wireless performance in multiple urban scenarios and across frequency bands

The project incorporates topics across disciplines such as wireless theory, embedded programming, hardware design, and ubiquitous computing. Student involvement in courses and research will allow cross-disciplinary intellectual growth. Further, field measurements will be made available to the research community. Finally, handheld mobile devices are increasingly being used as the primary method for under-represented groups to access the Internet. This infrastructure and resulting research will improve the performance these devices.

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