

Crepaldi Riccardo

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Student Member of IEEE, ACM and IEEE Communication Society

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Education

Current:	PhD student at University of Illinois at Urbana-Champaign (<i>Expected grad. Summer 2013</i>)
Advisor:	Robin H. Kravets
Academic grade:	Master's degree Telecommunication Engineering at University of Padova, Italy (<i>April 2006</i>)
Advisor:	Michele Zorzi

Research Interests

My research focuses primarily on the design of efficient algorithms for wireless mobile ad-hoc networks. Embedded sensors in mobile devices such as cars and smart phones present new opportunities to collect location-specific data about the environment. This data can be used for a great number of real-time applications. A major challenge is efficiently collecting, storing and sharing the data. I am interested in understanding the tradeoffs between energy consumption, network load and storage in the design of a fully distributed ad-hoc solution to this problem.

Research Experience

Graduate Research Assistant - University of Illinois (*Aug 2007 – present*)

- Design and implementation of a failure-robust service discovery protocol for the management of ubiquitous computing systems with applications in healthcare and smart environments.
- Design and evaluation of a replication system that provides reliable in-network data storage on Wireless Sensor Networks using probabilistic failure prediction models.
- Design and evaluation of a system that provides effective data detection in Wireless Sensor Networks.
- Design and evaluation of an energy efficient MAC protocols for Wireless Sensor Networks.
- Design and evaluation of a location-based data overlay network protocol for disruption-tolerant networks.
- Currently working on the design and deployment of a campus-wide multi-interface vehicular network testbed equipped with wireless radios, on-board sensors, GPS and mobile phones, to experiment a variety of sensing applications, and energy efficient protocols and DTN protocols in a real-world deployment.

Research Intern - HP Labs (*August 2010 -- December 2011*)

- Experimental study on the performances and the limits of the 802.11n technology in long-distance, outdoor scenarios.
- Design, implementation and experimental evaluation of CSI-SF, an estimation algorithm that reduces significantly the overhead to fully estimate the channel state of a MIMO link.

Research Intern - University of Padova (*May 2009 -- August 2009*)

- Improvement and Implementation of a stable version of SYNAPSE, a network programming application for Sensor Networks based on Fountain Codes. Experimental evaluation of the protocol in multi-hop scenarios.

Research Intern - IBM Research (*May 2008 -- August 2008*)

- Deployment of a full-scale, remotely managed testbed to support implementation and performance evaluation of SEAIT, a wireless sensor network solution that provides real-time visibility and mechanical health monitoring to the railroad system.

Research Scientist - Consorzio Ferrara Ricerche (Italy) (*May 2006 -- July 2007*)

- Design, deployment and maintenance of a Wireless Sensor Network.
- Design, implementation and performance evaluation of localization algorithms, routing protocol for WSNs and data dissemination protocols using network coding.
- Implementation of a prototype of a healthcare provisioning architecture.

Academic Teaching Experience

Teaching Assistant (Spring 2010: CS 241 Systems Programming, Spring 2012: UIUC CS 438 Communication Networks):

- Design, assistance and grading of Homeworks, Programming Assignment and Exams
- Prepared and given lectures for discussion sections on selected topics during the semester

Programming Languages and Technical Skills

OSs: Extensive knowledge of use and administration of Linux, MacOS, Windows computers and domains.

Programming Languages: C, C++, JAVA, J2EE Web Service, C#, NesC, Pascal, VB, MATLAB, Assembly, Perl, Bash, Labview

Simulation Tools: MATLAB, ns2, OMNet++

Other: Extensive knowledge of all major Office Automation programs, Database systems, Design of electronic circuits and PCB layout

Language Proficiency:

Italian (Native) - English (Fluent) – French (Reading skill: good, Writing – Speaking: elementary)

Awards and Honors

- Ray Ozzie Ph.D. fellowship from Dept. of Computer Science at UIUC (Fall 2007 – Spring 2008)
- 2nd place in ACM Mobicom 2012 Student Research Competition
- National Science Foundation (NSF) Student Travel Grant award to the 2012 ACM MobiCom conference

Academic Service

Journal Article Reviewer for:

IEEE Transactions on Mobile Computing 2012, IEEE Journal of Industrial Informatics 2010

Conference Article Reviewer for:

ACM HotNets, IEEE CCNC, IEEE SmartGridComm, IEEE SASN, European Wireless

Industry Experience

Instructor - Eureka s.n.c. Padova, Italy (2003-2004)

200 hours of teaching experience on Office Automation application, for private and industries.

Developer – Network Administrator (Nov.2002, May 2006)

Development of a tracking and labeling system for the meat processy industry.

Design and deployment of office Intranet and network administration.

Selected Publications (Full publication List available at: <http://mobiuss.cs.illinois.edu/people/crepaldi>)

Journal articles:

- Riccardo Crepaldi, Ryan Beavers, Braden Ehrat, Jason Sze, Matt Jaeger, Stieven Biersteker and Robin Kravets, **ACM MobiCom 2012 Poster: LoadingZones - Leveraging Street Parking to Enable Vehicular Internet Access**, *ACM SIGMOBILE Mobile Computing and Communications Review (MC2R)*, accepted for publication
- Michele Rossi, Nicola Bui, Giovanni Zanca, Luca Stabellini, Riccardo Crepaldi, and Michele Zorzi, **SYNAPSE++: Code Dissemination in Wireless Sensor Networks using Fountain Codes**, *IEEE Transactions on Mobile Computing*, Accepted.
- J. M. Reason and R. Crepaldi, **Ambient intelligence for freight railroads**, *IBM Journal of Research and Development*, to appear, Vol. 53, Issue 3/4, 2009.
- Raju Kumar, Riccardo Crepaldi, Hosam Rowaihy, Albert F. Harris III, Guohong Cao, Farooq Anjum, Michele Zorzi, and Thomas La Porta, **Mitigating Performance Degradation in Congested Sensor Networks**, *IEEE Transactions on Mobile Computing*, June 2008 Volume: 7,682-697

Conference articles:

- Riccardo Crepaldi, Ryan Beavers, Braden Ehrat, Jason Sze, Matt Jaeger, Stieven Biersteker and Robin Kravets, **LoadingZones: Leveraging Street Parking to Enable Vehicular Internet Access**, 7th *Workshop on Challenged Networks (CHANTS 2012)*
- Riccardo Crepaldi, Mehedi Bakht, Robin Kravets, QuickSilver: **Application-driven Inter- and Intra-cluster Communication in VANETs**, *The 3rd International Workshop on Mobile Opportunistic Networks (MobiOpp) 2012*
- Riccardo Crepaldi, Jeonkeun Lee, Raul Etkin, Sung-Ju Lee, Robin Kravets, **CSI-SF: Estimating Wireless Channel State Using CSI Sampling & Fusion**, *The 31th IEEE Conference on Computer Communications (INFOCOM) 2012*
- Utpal Paul, Riccardo Crepaldi, Jeongkeun Lee, Sung-Ju Lee, Raul Etkin **Characterizing WiFi Link Performance in Outdoor Networks**, 8th *Annual IEEE Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks (SECON) 2011*
- Thompson, N., R. Crepaldi, and R. Kravets, **Locus: A Location-based Data Overlay For Disruption-Tolerant Networks**, *Fifth Workshop on Challenged Networks (CHANTS 2010)*
- Riccardo Crepaldi, Mirko Montanari, Robin Kravets, Indranil Gupta, **Using Failure Models for Controlling Data Availability in Wireless Sensor Networks**, *The 28th IEEE Conference on Computer Communications (INFOCOM) 2009*
- Riccardo Crepaldi, Albert F Harris III, Rob Kooper, Robin Kravets, Gaia Maselli, Chiara Petrioli, and Michele Zorzi, **Managing Heterogeneous Sensors and Actuators in Ubiquitous Computing Environments**, 1st *ACM Workshop on Sensor Actor Networks (SANET) 2007*
- Riccardo Crepaldi, Simone Friso, Albert F. Harris III, Michele Mastrogiovanni, Chiara Petrioli, Michele Rossi, Andrea Zanella, and Michele Zorzi, **SignetLab: The design, deployment, and analysis of SignetLab: a sensor network testbed and interactive management tool**, *Tridentcom 2007*

Interests and Hobbies

Travel, Digital Photography, Mountaneering, Rock climbing

References

Available upon Request