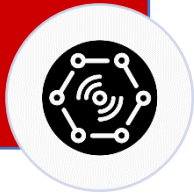


DCSL Research Milestones

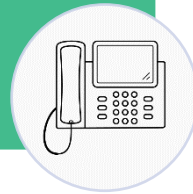
- Participants: I. Khalil, D.H. Shin, N. Shroff; L. Montestruque (EmNet LLC)
- Funding: NSF, Indiana 21st Century
- Local monitoring using omnidirectional antennas to provide intrusion detection capability in a wide variety of ad hoc wireless networks
- Details: [DSN-05](#), [Mobihoc-09](#), [Sensys-09](#)

Ad-hoc wireless security [2005-09]



- Participants: Yu-Sung Wu, Vinita Apte; Navjot Singh, Sachin Garg, Tim Tsai (Avaya Labs)
- Funding: Avaya
- Developed customized intrusion detection & spam detection capability for Voice-over-IP (VoIP) protocols
- Details: [DSN-04](#), [Springer-09](#), [DSN-09](#), [Patent-08](#)

Voice-over-IP protocol security [2003-09]



- Participants: Fahad Arshad, Gaspar Howard, Rudolf Eigenmann
- Funding: NSF Center (NEES)
- Practical security controls for the large cyberinfrastructure that supports earthquake eng sites at 14 US universities
- Details: [IEEE CiSE-11](#), [NSF-14](#), [DSN-14](#)

Cyberinfrastructure for earthquake engineering [2009-14]



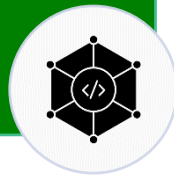
- Participants: Edgardo Barsallo, Amiya Maji; Jan Rellermeyer (IBM)
- Funding: NSF
- We developed a fuzzing-based tool to uncover vulnerabilities in Android and later WearOS (aka Android Wear)
- We recommended improvements to the software architecture, several of which were adopted by Google
- Details: [ISSRE-10](#), [DSN-12](#), [DSN-18](#)

Security & reliability of mobiles & wearables [2009-12, 2017-now]



- Participants: Rajesh Panta, Sam Midkiff; Luis Montestruque (EmNet)
- Funding: NSF
- Fastest wireless reprogramming protocol for multi-hop wireless networks
- Program analysis & transformation to minimize data sent over wireless medium
- Details: [Infocom-07](#), [UsenixATC-09](#), [TOSN-11](#), [Patent-12](#)

Wireless reprogramming [2007-11]



- Participants: Ignacio Laguna, Subrata Mitra; Greg Bronevetsky, Bronis Supinski (LLNL)
- Funding: Department of Energy
- 1st technique for error detection & diagnosis of non-crash failure in supercomputing applications
- Showed how to structure error detection into local, near neighbor, & global checks for achieving scalability; Approximation through mixed precision computing on GPUs with bounded error
- Details: [DSN-10](#), [Supercomputing-11](#), [PLDI-14](#), [ICS-19](#)

Reliability of supercomputing applications [2009-14, 2018-now]

