Overview of the Networking and Mobility Track

Prof. Geoffrey Xie

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24 July 2014

Faculty Members (1/2)

- Geoff Xie, PhD *(xie@nps.edu)*
  - Network analysis & optimization, disruption-tolerant / tactical networks, software defined networks, crowdsourcing
- Gurminder Singh, PhD *(gsingh@nps.edu)*
  - Faculty lead in areas of mobile systems, all topics related to mobile devices, emphasizing systems development and experimentation
- Rob Beverly, PhD *(rbeverly@nps.edu)*
  - Network mapping, botnet detection, network defense by deception, IPv6, protocol design (https://www.cmand.org)
- Bert Lundy, PhD *(blundy@nps.edu)*
  - Network modeling, testing, policy and history
- Dennis Volpano, PhD *(volpano@nps.edu)*
  - Software defined networks, network modeling, security

Faculty Members (2/2)

- John Gibson *(jhgibson@nps.edu)*
  - Tactical networks, trusted handheld, unmanned aerial vehicles
- Justin Rohrer, PhD *(jprohrer@nps.edu)*
  - Resilient and disruption tolerant networks, airborne networks, GENI (Global Environment for Network Innovation)
- Arijit Das *(adas@nps.edu)*
  - Database, mobile applications, Navy tactical cloud
- Charles Prince *(cdprince@nps.edu)*
  - Trusted handhelds, crowdsourcing, free space optical comm.

Track Courses (1/2)

- **CS 3502: Introduction to Computer Networks**
  - part of CS core matrix
- **CS 4550: Advanced Topics in Networking**
  - selected advanced topics (Quality of Service, IPv6, SDN, etc.)
- **CS 4552: Network Design and Programming**
  - hands-on experience of building and administrating network protocols and services
- **CS4554: Network Modeling and Analysis**
  - how to model and evaluate performance of networks
- **CS4558: Network Traffic Analysis**
  - applied large-scale analysis, inference, and characterization of network traffic for engineering, security, policy, and optimization

Track Courses (2/2)

- **CS 4533: Wireless Mobile Computing**
  - Cellular wireless networks (2G, 2.5/3/4G), Wireless LANs, Mobile IP, Mobile system architectures
- **CS 4535: Mobile Devices**
  - Mobile device technologies (display, power, memory, etc.), power-aware applications, user interface design, device management
- **CS 4537: Wireless Data Services**
  - Wireless application protocol and architecture, SMS/MMS systems, Technologies for device and network independence
- **CS 4538: Wireless and Mobile Security**
  - Security implications of wireless, analysis of attacks and defenses in WiFi, GSM, RFID, GPS. Mobile forensics and code security.
- **Tactical Networking (**to be developed)

Some Recently Completed Theses

- Application Transparent HTTP over a Disruption Tolerant SmartNet (Lance Alt, LT USN, sep-14; Advisors: Xie/Rohrer)
- Energy-Aware Group Context-Aware Sensor Management for Tactical Operation (Sam Graves, Capt USMC, Advisors: Singh/Gibson)
- Information Collection Using Handheld Devices in Unreliable Networking Environments (Mari Torres, Capt USA, Advisors: Singh/Gibson)
- IPv6 geolocation using latency constraints (Tony Tran, LT USN, Advisors: Beverly/Xie)
- Employing deceptive dynamic network topology through software-defined networking (Jason Hughes, LT USN, Advisor: Beverly)
- Efficient strategies for active interface-level network topology discovery (Guillermo Baltra, Chile, Advisors: Beverly/Xie)
- IPv6 alias resolution via induced router fragmentation (Billy Brinkmeyer, LT USN, Advisor: Beverly)
- Incentivizing and evaluating Internet-wide Network Measurements (Gokay Huz, Turkey, Advisor: Beverly)

Recent Publications from Student Theses

- Alt, Rohrer, Xie, "Demo: Application Transparent Deployment of DTN via SmartNet," 9th ACM MobiCom Workshop on Challenged Networks, 2014
- Craven (NPS PhD), Beverly, Allman, "A Middlebox-Cooperative TCP for a non End-to-End Internet," ACM SIGCOMM 2014
- Baltra, Beverly, Xie, Ingress Point Spreading: A New Primitive for Adaptive Active Network Mapping," PAM 2014
- Ohleger, Xie, Gibson, "Extending UAV Video Dissemination via Seamless Handover: A Proof of Concept Evaluation of the IEEE 802.21 Standard," HICSS 2013
- Luckie, Beverly, Brinkmeyer, claffy, "Speedtrap: Internet-Scale IPv6 Alias Resolution," ACM IMC 2013
- Trassare, Bevelry, Alderson, "A Technique for Network Topology Deception," MILCOM 2013
- Martin, Rhame, Beverly, McEachen, "Correlating GSM and 802.11 Hardware Identifiers," MILCOM 2013
- Kakavelakis, Beverly, Young, "Auto-learning of SMTP TCP Transport-Layer Features for Abusive Message Detection," LISA 2011
- Beverly, Garfinkel, Cardwell, "Forensic Carving of Network Packets and Associated Data Structures," DFRWS 2011