Overview of the Networking and Mobility Track

Prof. Geoffrey Xie
(last name pronounced “Shea”)
xie@nps.edu, GE-125
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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

- **CS 4554: Network Modeling and Analysis**
  - how to model and evaluate performance of networks

- **CS 4558: 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

- 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
- Martin, Rhame, Beverly, McEachen, “Correlating GSM and 802.11 Hardware Identifiers,” MILCOM 2013
- Beverly, Garfinkel, Cardwell, “Forensic Carving of Network Packets and Associated Data Structures,” DFRWS 2011