George P. Nychis

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[Education]

Carnegie Mellon University, Ph.D. in ECE, expected graduation December 2011 (current GPA 4.0 / 4.0)
Carnegie Mellon University, MS in Information Networking, May 2007 (GPA 3.71 / 4.00)
University of Pittsburgh, BS in Computer Science, May 2005

[Honors / Accomplishments]

- Awarded Vlahakis fellowship by CMU ECE department, only 1 given a year.
- Invited to write GNU Radio / SDR book chapter.
- Invited to give SDR MAC talk at CISDR Workshop.
- Founded GNU Radio archive (https://www.cgran.org)
- Passed Ph.D. qualifier in Fall 2008.

[Publications]

- *Enabling MAC Protocol Implementations on Software-defined Radios,* G. Nychis, T. Hottelier, Z. Yang, S. Seshan, P. Steenkiste, NSDI, 2009.
- *An Empirical Evaluation of Entropy-based Anomaly Detection,* G. Nychis, V. Sekar, D. Andersen, H. Kim, H. Zhang, ACM Internet Measurement Conference, 2008.
- *Rationale for a Clean Slate Radio Architecture (Invited Paper)* , R. Farrell, A. Wyglinski, C. Anderson, G. Nychis, et al. Software-defined Radio Technical Conference 2008.

[Professional Talks Given]

- An Empirical Evaluation of Entropy-based Anomaly Detection*, Internet Measurement Conference '08 (Greece).*
- Enabling MAC Protocol Implementations on Software-defined Radios, *CISDR Workshop '08 (Ireland).*
- Reliable Wireless Communication in Nuclear Containment, *Westinghouse Nuclear 2006.*

[Teaching Experience]

- 15-441: Computer Networks (Spring 09)
- 15-441: Computer Networks (Fall 06)
- 18-842: Graduate Distributed Systems (Spring 07)

[Notable Courses]

- 15-441: Computer Networks
- 15-744: Graduate Computer Networks
- 15-849: Graduate Wireless Networks
- 15-849: Hot Topics in Computer Networks
- 18-342: Embedded Systems
- 18-756: Packet Switching & Computer Networks
- 18-842: Graduate Distributed Systems
- 18-544: Network Design & Evaluation
- 18-757: Network Management and Control
- 39-650: Sensor Networks

[Research]

Detecting Exposed Terminals, Present. Evaluating the impact of exposed terminals on wireless networks.

Enabling MAC Protocol Implementations on Software-defined Radios, 2007-2008. Introduce novel split-functionality architecture for implementing core MAC functions which overcome SDR limitations.

An Empirical Evaluation of Entropy-based Anomaly Detection, 2007. Studied the power of entropy-based traffic metrics in conjunction at detecting network anomalies.

FastPass, 2006. Implementation and evaluation of a network DDoS resilient architecture on the IXP2400 platform.

Analysis of XCP in a Wireless Environment, 2006. Discovered an Internet congestion control protocol, XCP, can achieve up to 200% of TCP's throughput in lossy wireless networks.

QoS for Time Sensitive Applications, 2006. Analysis of the effects of background network traffic on time sensitive foreground network traffic, such as BitTorrent on HTTP.

P2PeuR, 2006. Evaluation of erasure coding to increase the scalability of peer to peer backup systems.

ArcticNet, 2004 – 2005. A stateless scalable sensor network access management system.

[Industry Research]

Deployment of Reliable Wireless Communication in Nuclear Containment 2005-2006. A project for Westinghouse Nuclear to test the deployment of wireless communication in nuclear containment.

Wireless Home Sensor Network, 2004. As research for Seagate, created a prototype of a cost efficient wireless home sensor network system.

[Experience (Ranked 0-5)]

- Programming Languages: C (5), C++ (4), Ruby (4), Perl (3), Java (3), Verilog (2)
- Tools: EmuLab (5), CMU Wireless Emulator (4), NS-2 (3)