Matthew Lentz

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Academic Appointment

Duke University, Durham, North Carolina USA **Fall 2021 –**
Assistant Professor
My research focus is at the intersection of systems, networking, and security. I'll be joining the Department of Computer Science at Duke in Fall 2021.

Education

University of Maryland, College Park, Maryland USA
Ph.D. in Computer Science, August 2020
Dissertation: Assurance and Control over Sensitive Data on Personal Devices
Advisor: Bobby Bhattacharjee
B.S. in Computer Engineering, May 2010

Refereed Publications

1. **enClosure: Group Communication via Encounter Closures**
   Lillian Tsai, Roberta De Viti, *Matthew Lentz*, Stefan Saroiu, Peter Druschel, Bobby Bhattacharjee
   MobiSys 2019 (International Conference on Mobile Systems, Applications, and Services)

2. **SeCloak: ARM TrustZone-based Mobile Peripheral Control**
   Matthew Lentz, Rijurekha Sen, Peter Druschel, Bobby Bhattacharjee
   MobiSys 2018 (International Conference on Mobile Systems, Applications, and Services)

3. **Dynamic Frequency Resource Allocation in Heterogeneous Cellular Networks**
   Vaibhav Singh, *Matthew Lentz*, Bobby Bhattacharjee, Richard La, Mark Shayman
   IEEE TMC 2016 (Transactions on Mobile Computing)

4. **Drowsy Power Management**
   Matthew Lentz, James Litton, Bobby Bhattacharjee
   SOSP 2015 (Symposium on Operating System Principles)

5. **Brave New Word: Privacy Risks for Mobile Users**
   Paarijaat Aditya, Bobby Bhattacharjee, Peter Druschel, Viktor Erdelyi, Matthew Lentz *(Alphabetical)*
   SPME 2014 (Workshop on Security and Privacy Aspects of Mobile Environments)

6. **SDDR: Light-weight, Secure Mobile Encounters**
   Matthew Lentz, Viktor Erdelyi, Paarijaat Aditya, Elaine Shi, Peter Druschel, Bobby Bhattacharjee
   USENIX Security Symposium 2014

7. **EnCore: Private, Context-based Communication for Mobile Social Apps**
   Paarijaat Aditya, Viktor Erdelyi, *Matthew Lentz*, Elaine Shi, Bobby Bhattacharjee, Peter Druschel
   MobiSys 2014 (International Conference on Mobile Systems, Applications, and Services)

8. **D-Mystifying the D-Root Address Change**
   Matthew Lentz, Dave Levin, Jason Castonguay, Neil Spring, and Bobby Bhattacharjee
   IMC 2013 (Internet Measurement Conference) Short Paper

Invited Talks

SeCloak: ARM TrustZone-based Mobile Peripheral Control June 2018
MobiSys Conference in Munich, Germany

Drowsy Power Management October 2015
SOSP Conference in Monterey, California

SDDR: Light-Weight, Secure Mobile Encounters August 2014
USENIX Security Symposium in San Diego, California

D-Mystifying the D-Root Address Change October 2013
IMC Conference in Barcelona, Spain

Research Experience

VMware Research, Palo Alto, California USA **6/2020 – Present**
Postdoctoral Researcher
Investigating the utility of applying formal verification techniques to enabling new trusted execution environment (TEE) features, as well as enhancing existing ones. My focus is primarily on features that relate to enabling usage of TEEs in virtualized environments (e.g., migration).

Microsoft Research, Redmond, Washington USA **3/2017 – 5/2017**
Research Intern (Mentors: Anirudh Badam, Ranveer Chandra)
Continuation of my work during the previous internship.

Microsoft Research, Redmond, Washington USA **5/2016 – 8/2016**
Research Intern (Mentors: Anirudh Badam, Ranveer Chandra)
Performed research on algorithms and optimization for multi-battery systems, with a focus on "2-in-1" laptop/tablet systems. Worked towards informing the low-level control logic with relevant user behavior predictions (e.g., time until next charge) based on telemetry data. Built a simulator for the design and evaluation of multi-battery systems, with support for various hardware interconnects, battery models, workloads, and control algorithms.

University of Maryland, College Park, Maryland USA **2/2012 – 6/2020**
Graduate Research Assistant (Advisor: Bobby Bhattacharjee)
Performed research in a variety of areas, including:
- Operating system support for enforcing policies over I/O data
- Censorship-resistant communication over video chats
- Operating system power management
- Cellular network spectrum allocation and sharing
- Privacy-preserving mobile social applications
- DNS root server measurement and analysis

NSA - Laboratory for Telecommunication Sciences, College Park, Maryland USA **5/2011 – 8/2011**
Intern - Computer Science Internship Program
Added support for the LLVM compiler infrastructure to Cray's Chapel parallel programming language compiler, allowing for faster compilation and better control over optimizations.

NSA - Laboratory for Telecommunication Sciences, College Park, Maryland USA **9/2010 – 5/2011**
Graduate Research Assistant
Continuation of my work during the previous internship.

NSA - Laboratory for Telecommunication Sciences, College Park, Maryland USA **6/2010 – 8/2010**
Intern - Computer Science Internship Program
Developed highly-optimized real-time signal processing software using NVIDIA's CUDA libraries to look for signals in the environment, as well as compute their range and direction of arrival.

Teaching Experience

CMSC417: Computer Networks **Fall 2019**
Teaching Assistant
Managed a group of three undergraduate and two graduate TAs in their efforts to update course assignments and grade student submissions. Helped the instructor with both writing and grading exams, and by giving lectures.

CMSC417: Computer Networks **Fall 2015**
Teaching Assistant
Designed new course projects to emphasize aspects of high-performance networking (priority-based job scheduler), and usage of traffic analysis tools such as Wireshark (chat protocol reverse engineering). Developed a Git-based project submission and grading system, as well as a new testing infrastructure.

Professional Experience

DRS Signal Solutions, Gaithersburg, Maryland USA **6/2009 – 8/2009**
Intern - Embedded Software Engineering
Developed a complete signal collection product prototype, implementing features in software running on an embedded radio platform.

DRS Signal Solutions, Gaithersburg, Maryland USA **6/2008 – 8/2008**
Intern - Application Software Engineering
Programmed helper applications for common engineering tasks, and expanded the feature set of GUI applications which interface with the hardware radio platforms.