# Alexander Marder, PhD

Assistant Professor of Computer Science

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## EDUCATION

**Ph.D.**   University of Pennsylvania   December 2019
PhD Computer and Information Sciences
Thesis: "Sharp Snapshots of the Internet's Graph with HONE"
Advisor: Jonathan M. Smith, PhD

**M.S.**   University of Pennsylvania   May 2014
Computer and Information Sciences

**B.S.**   Brandeis University   May 2012
BS Computer Science
Thesis: "Course Recommender System"
Advisor: Timothy J. Hickey

## FUNDING

**HEIST: Hybrid Space/Submarine Architecture Ensuring Infosec of Telecommunications**
Co-PI with Gregory Falco (Cornell), Hans Liwang (Swedish Defense University), Bjarni Mar
Magnusson (Bifrost University), Sarah Wiedemar (ETH Zurich)
NATO Emerging Security Challenges Division, Science for Peace and Security
July 2024 – June 2027

**AVOID 5G: Automatic Verification of Internet Data-Paths for 5G**
PI with Erik Kline (USC ISI), Ricky Mok (CAIDA), kc claffy (CAIDA), and Kyle Jamieson
(Princeton)
NSF Convergence Accelerator 2023 Joint NSF/DOD Phase 2 for Track G, $5,000,000
September 2023 – August 2025

**Detection and Analysis of Infrastructure Bottlenecks in a Cloud-Centric Internet**
Co-PI with Ricky Mok and kc claffy
NSF CNS Core Medium, $1,200,000
October 2022 – September 2025

**5G Traffic Sovereignty: Operating Through an Adversarial Internet**
PI with Ricky Mok and kc claffy
NSF Convergence Accelerator 2022 Joint NSF/DOD Phase 1 for Track G, $750,000
July 2022 – June 2023

**Measurement Capabilities for the Modern Internet**
PI
NSF CRII, $175,000

**Alexander Marder, Ph.D.**

May 2021 – May 2023

## PROFESSIONAL EXPERIENCE

**Assistant Professor**                                              July 2023 – Present
  Department of Computer Science
  Institute for Assured Autonomy
  Johns Hopkins University
  Baltimore, Maryland

**Assistant Research Scientist**                          November 2020 – June 2023
  CAIDA
  University of California, San Diego
  La Jolla, California

**Postdoctoral Fellow**                                September 2019 – October 2020
  *Mentors*: kc claffy and Alex C. Snoeren
  CAIDA
  University of California, San Diego
  La Jolla, California

**Research Assistant**                                      August 2014 – August 2019
  *Advisor*: Jonathan M. Smith
  Department of Computer and Information Sciences
  University of Pennsylvania
  Philadelphia, PA

## PUBLICATIONS

**Alexander Marder**, Jon Larrea, kc claffy, Erik Kline, Kyle Jamieson, Bradley Huffaker, Lincoln Thurlow, Matthew Luckie. "REVEAL: Real-time Evaluation and Verification of External Adversarial Links" MILCOM. 2024.

Haoran Wan, **Alexander Marder**, Kyle Jamieson. "NR-Scope: A Practical 5G Standalone Telemetry Tool" CoNEXT. 2024.

Bradley Huffaker, Romain Fontugne, **Alexander Marder**, kc claffy. "On the Importance of Being and AS: An Approach to Country-Level AS Rankings" Internet Measurement Conference. 2023. [long]

Thomas Krenc, Matthew Luckie, **Alexander Marder**, kc claffy. "Coarse-grained Inference of BGP Community Intent" Internet Measurement Conference. 2023. [short]

**Alexander Marder**, Zesen Zhang, Ricky Mok, Ramakrishna Padmanabhan, Bradley Huffaker, Matthew Luckie, Alberto Dainotti, kc claffy, Alex C. Snoeren, Aaron Schulman. "Access Denied: Assessing Physical Risks to Internet Access Networks" Usenix Security. 2023.

Ben Du, Gautam Akiwate, Thomas Krenc, Cecilia Testart, **Alexander Marder**, Bradley Huffaker, Alex C. Snoeren, and kc claffy. "IRR Hygiene in the RPKI Era" Passive and Active Measurement Conference. 2022.

Matthew Luckie, **Alexander Marder**, Bradley Huffaker, and kc claffy. "Learning Regexes to Extract Network Names from Hostnames" Asian Internet Engineering Conference. 2021.

Matthew Luckie, Bradley Huffaker, **Alexander Marder**, Zachary Bischof, and kc claffy. "Learning to Extract Geographic Information from Internet Router Hostnames" Conference on emerging Networking EXperiments and Technologies (CoNEXT). 2021

Zesen Zhang, **Alexander Marder**, Ricky Mok, Bradley Huffaker, Matthew Luckie, kc claffy, and Aaron Schulman. "Inferring Regional Access Network Topologies: Methods and Applications" Internet Measurement Conference. 2021. [long]

**Alexander Marder**, kc claffy, Alex C. Snoeren. "Inferring Cloud Interconnections: Validation, Geolocation, and Routing Behavior" Passive and Active Measurement Conference. 2021.

Matthew Luckie, **Alexander Marder**, Marianne Fletcher, Bradley Huffaker, kc claffy. "Learning to Extract and Use ASNs in Hostnames" Internet Measurement Conference. 2020. [short]

**Alexander Marder**. "Alias Pruning by Path Length Estimation (APPLE)" Passive and Active Measurement Conference. 2020.

**Alexander Marder**, Matthew Luckie, Bradley Huffaker, kc claffy. "vrfinder: Finding Outbound Addresses in Traceroute" SIGMETRICS. 2020.

**Alexander Marder**, Matthew Luckie, Amogh Dhamdhere, Bradley Huffaker, kc claffy, Jonathan M. Smith. "Pushing the Boundaries with bdrmapIT: Mapping Router Ownership at Internet Scale" Internet Measurement Conference. 2018. [long]

**Alexander Marder**, Jonathan M. Smith. "MAP-IT: Multipass Accurate Passive Inferences from Traceroute" Internet Measurement Conference. 2016. [long]

## DEMOS

Haoran Wan & Xuyang Cao, **Alexander Marder**, Kyle Jamieson. "Demo: Decoding Control Information Passively from Standalone 5G Network" MobiCom. 2024

**Alexander Marder**, Jon Larrea, kc claffy, Erik Kline, Kyle Jamieson, Bradley Huffaker, Lincoln Thurlow, Matthew Luckie. "AVOID: Automatic Verification of Internet Data-paths" MILCOM Demos. 2024.

## INVITED TALKS

"Securing 5G Against the Fragile and Malicious Infrastructure." IEEE 5G Workshop on First Responder and Tactical Networks. December 2023.

Panelist. French-American Cyber Security Conference. December 2023.

"How do Clouds Use IXPs?" Euro-IX Meeting. December 2020.

## PROFESSIONAL SERVICE

**National Science Foundation**

**Alexander Marder, Ph.D.**

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| Proposal Review Panel | 2023 |
| Proposal Review Panel | 2022 |

**Program Committee**

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|---|---|
| INFOCOM | 2023 |
| Internet Measurement Conference | 2021 |
| Passive and Active Measurement Conference | 2020 |