Erik Rye

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RESEARCH
INTERESTS
Network security, privacy, network measurement

EDUCATION

PhD Computer Science, University of Maryland, College Park — 2025

MS Computer Science, Naval Postgraduate School — 2015

MS Applied Mathematics, Naval Postgraduate School — 2015

BS Mathematics, US Naval Academy — 2008

ACADEMIC
EXPERIENCE

Research Assistant Professor, Johns Hopkins University — 2025–Present
- Empirical network security and privacy
- Internet security measurements
- Wireless security

PhD Candidate, University of Maryland — 2022–2025
Advisor: Dave Levin
- Emphasis on the privacy implications of large-scale network address enumeration.
- Demonstrated novel privacy attacks affecting hundreds of millions of users worldwide; worked with Apple, SpaceX and router manufacturers to remediate vulnerabilities.
- Discovered new location privacy threats to IPv6 residential deployments.
- Developed technique to discover active IPv6 clients through passive measurements.

Research Scientist, Center for Measurement and Analysis of Network Data (CMAND) — 2015–2022
- Pioneered cutting-edge, active measurement techniques for discovering residential IPv6 deployments.
- Quantified the phenomenon of high-frequency IPv6 delegated prefix rotation in residential ISPs.

Master Instructor, US Naval Academy — 2015–2018
- Instructed wide range of computer science and cybersecurity coursework, from entry-level to independent research courses.
- Served as technical advisor to three capstone teams.
- Co-founded wireless security research group.

PEER-
REVIEWED
PUBLICATIONS

[1] Steven Su, **Erik Rye**, Dave Levin, Robert Beverly. Buy it Now, Track Me Later: Attacking User Privacy via Wi-Fi AP Online Auctions. *Privacy Enhancing Technologies Symposium (PETS)*, 2025. Acceptance rate: 20%.

[2] Sadia Nourin, **Erik Rye**, Kevin Bock, Nguyen Phong Hoang, Dave Levin. Is Nobody There? Good! Globally Measuring Connection Tampering without Responsive Endhosts. *IEEE Security and Privacy (Oakland)*, 2025. Acceptance rate: 15%.

[3] **Erik Rye**, Dave Levin. Surveilling the Masses with Wi-Fi-Based Positioning Systems. *IEEE Security and Privacy (Oakland)*, 2024. Acceptance rate: 17%.

[4] **Erik Rye**, Dave Levin. IPv6 Hitlists at Scale: Be Careful What You Wish For. *ACM SIGCOMM*, 2023. Acceptance rate: 20%.

[5] **Erik Rye**, Robert Beverly. IPvSeeYou: Exploiting Leaked Identifiers in IPv6 For Street-Level Geolocation. *IEEE Security and Privacy (Oakland)*, 2023. Acceptance rate: 17%.

[6] Travis Mayberry, Ellis Fenske, Dane Brown, Jeremy Martin, Christine Fossaceca, **Erik Rye**, Sam

Teplov, Lucas Foppe. Who Tracks the Trackers? Circumventing Apple's Anti-Tracking Alerts in the FindMy Network. *Workshop on Privacy in the Electronic Society (WPES)*, 2021. Acceptance rate: 34%.

[7] **Erik Rye**, Robert Beverly, kc claffy. Follow the Scent: Defeating IPv6 Prefix Rotation Privacy. *Internet Measurement Conference (IMC)*, 2021. Acceptance rate: 28%. **Best Paper Award**.

[8] Ellis Fenske, Dane Brown, Jeremy Martin, Travis Mayberry, Peter Ryan, **Erik Rye**. Three Years Later: A Study of MAC Address Randomization In Mobile Devices And When It Succeeds. *Privacy Enhancing Technologies Symposium (PETS)*, 2021. Acceptance rate: 19%.

[9] **Erik Rye**, Jeremy Blackburn, Robert Beverly. Reading In-Between the Lines: An Analysis of Dissenter. *Internet Measurement Conference (IMC)*, 2020. Acceptance rate: 25%.

[10] **Erik Rye**, Robert Beverly. Discovering the IPv6 Network Periphery. *Passive and Active Network Measurement Conference (PAM)*, 2020. Acceptance rate: 29%.

[11] Jeremy Martin, Douglas Alpuche, Kristina Bodeman, Lamont Brown, Ellis Fenske, Lucas Foppe, Travis Mayberry, **Erik Rye**, Brandon Sipes, Sam Teplov. Handoff All Your Privacy – A Review of Apple's Bluetooth Low Energy Continuity Protocol. *Privacy Enhancing Technologies Symposium (PETS)*, 2019. Acceptance rate: 22%.

[12] **Erik Rye**, Robert Beverly. Sundials in the Shade: An Internet-Wide Perspective on ICMP Timestamps. *Passive and Active Network Measurement Conference (PAM)*, 2019. Acceptance rate: 27%.

[13] Lucas Foppe, Jeremy Martin, Travis Mayberry, **Erik Rye**, Lamont Brown. Exploiting TLS Client Authentication for Widespread User Tracking. *Privacy Enhancing Technologies Symposium (PETS)*, 2018. Acceptance rate: 16%.

[14] Jeremy Martin, Travis Mayberry, Collin Donahue, Lucas Foppe, Lamont Brown, Chadwick Riggins, **Erik Rye**, Dane Brown. A Study of MAC Address Randomization in Mobile Devices and When it Fails. *Privacy Enhancing Technologies Symposium (PETS)*, 2017. Acceptance rate: 23%.

[15] Jeremy Martin, **Erik Rye**, Robert Beverly. Decomposition of MAC Address Structure for Granular Device Inference. *Annual Computer Security Applications Conference (ACSAC)*, 2016. Acceptance rate: 23%.

[16] **Erik Rye**, Justin P Rohrer, Robert Beverly. Revisiting AS-Level Graph Reduction. *Workshop on Network Science for Communication Networks (NetSciCom)*, 2016. Acceptance rate: 24%.

[17] Benjamin Davis, Ralucca Gera, Gary Lazzaro, Bing Yong Lim, **Erik Rye**. The Marginal Benefit of Monitor Placement on Networks. *Conference on Complex Networks*, 2016.

[18] Jonathan Roginski, Ralucca Gera, **Erik Rye**. The Neighbor Matrix: Generalizing the Degree Distribution. *Journal of Combinatorial Mathematics and Combinatorial Computing (JCMCC)*, 2016.

TECHNICAL
REPORTS

[1] **Erik Rye**. Visualizing MAC and IPv6 Address Allocations. 2023.

[2] **Erik Rye**, Robert Beverly. RFC 8567 - Customer Management DNS Resource Records. 2019.

[3] **Erik Rye**, Jeremy Martin, Robert Beverly. EUI-64 Considered Harmful. 2019.

[4] **Erik Rye**, Robert Beverly. SDN as Active Measurement Infrastructure. 2017.

[5] **Erik Rye**, Justin Rohrer. Graph Reduction for Emulated Network Experimentation. 2015.

PATENTS

[1] **Erik Rye**, Robert Beverly. Discovering and Clustering IPv6 Addresses by Hardware Identifiers, US Patent Number 12021829. 2024.

TEACHING
EXPERIENCE

Independent Research, SY495/SY496, US Naval Academy
1 x Spring 2016, 1 x Fall 2017

Computer Networks, IC322, US Naval Academy
2 x Fall 2017 (course coordinator), 3 x Fall 2018 (course coordinator)

Computer Architecture, IC220, US Naval Academy
2 x Fall 2016, 2 x Fall 2017, 2 x Fall 2018 (course coordinator)

Systems Programming, IC221, US Naval Academy
1 x Fall 2018

Intro to Cybersecurity, SY110/SI110, US Naval Academy
3 x Fall 2016, 1 x Fall 2017

Intro to Web Design, SI200, US Naval Academy
1 x Spring 2016 (course coordinator), 1 x Spring 2017 (course coordinator)

TALKS

[1] **Erik Rye**. Surveilling the Masses with Wi-Fi Positioning Systems. *Black Hat USA*. 2024.

[2] **Erik Rye**. IPvSeeYou: Exploiting Leaked Identifiers in IPv6 for Street-Level Geolocation. *Institute for Defense Analyses Cybersecurity Developmental Test Cross-Service Working Group (CyberDT XSWG)*. 2022.

[3] **Erik Rye**, Robert Beverly. IPvSeeYou: Exploiting Leaked Identifiers in IPv6 for Street-Level Geolocation. *Black Hat USA*. 2021.

[4] **Erik Rye**, Robert Beverly. Toxicity in Two Online Platforms: Dissenter and GitHub. *Sonoma State University*. 2021.

[5] **Erik Rye**. SDN as Active Measurement Infrastructure. *Center for Applied Internet Data Analysis (CAIDA) Active Internet Measurements Workshop (AIMS)*. 2017.

[6] **Erik Rye**. Emulated Router Inference Kit. *CAIDA Active Internet Measurements Workshop (AIMS)*. 2015.

[7] Jon Roginski, **Erik Rye**. Evaluating Structural Disruption in Adaptive Networks. *The Institute for Operations Research and the Management Sciences (INFORMS)*. 2014.

BLOG POSTS

[1] **Erik Rye**. Defeating IPv6 Prefix Rotation Privacy. *APNIC Blog Guest Post*. 2022.

[2] **Erik Rye**. Measuring the IPv6 Network Periphery. *APNIC Blog Guest Post*. 2020.

POPULAR MEDIA COVERAGE

[1] Brian Krebs. Why Your Wi-Fi Router Doubles as an Apple AirTag. *Krebs on Security*. 2024.

[2] Paul Wagenseil. Your Wi-Fi Router Could Tell Everyone Where You Live — Here's What You Can Do About It. *Tom's Guide*. 2021.

[3] Max Eddy. Is Your Crummy Router Giving Away Your Location? *PC Mag*. 2021.

[4] Thomas Claburn. Latest Phones are Great at Thwarting Wi-Fi Tracking. Other Devices, Not So Much – Study. *The Register*. 2021.

[5] Thomas Claburn. MAC Randomization: A Massive Failure that Leaves iPhones, Android Mobes Open to Tracking. *The Register*. 2017.

ADVISING

[1] *Analysis of EUI-64-based Addressing and Associated Vulnerabilities*, Kirstin Thordarson, Naval Postgraduate School, Masters Thesis, 2020. Second reader.

[2] *Sunup: ICMP Timestamp Behaviors in Fingerprinting*, Terrence Kvitchko, Naval Postgraduate School, Masters Thesis, 2019. Second reader.

SERVICE

Program Committee, Internet Measurement Conference (IMC)   2025
Reviewer, Transactions on Mobile Computing   2025
Program Committee, Internet Measurement Conference (IMC)   2024
Reviewer, IEEE Transactions on Networking   2020
Reviewer, IEEE Communications Letters   2020

Shadow Program Committee, Internet Measurement Conference (IMC) 2017

AWARDS AND **Caspar Bowden Award for Outstanding Research in Privacy Enhancing Technologies** 2025
HONORS **Distinguished Reviewer**, Internet Measurement Conference (IMC) 2024
Best Paper Award, Internet Measurement Conference (IMC) 2021
Computer Science Nominee for the Clements Teaching Award, US Naval Academy 2018
Computer Science Nominee for the Apgar Teaching Award, US Naval Academy 2017
Hopper Award for Excellence in Computer Science, Naval Postgraduate School 2015
Church Award for Excellence in Mathematics, Naval Postgraduate School 2015
Graduated with Distinction in Computer Science, Naval Postgraduate School 2015
Graduated with Distinction in Applied Mathematics, Naval Postgraduate School 2015
Graduated with Honors in Mathematics, US Naval Academy 2008