

Erik Rye

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RESEARCH INTERESTS Network security, privacy, network measurement

EDUCATION **PhD Computer Science**, University of Maryland, College Park Anticipated Spring 2025
MS Computer Science, Naval Postgraduate School 2015
MS Applied Mathematics, Naval Postgraduate School 2015
BS Mathematics, US Naval Academy 2008

ACADEMIC EXPERIENCE **PhD Candidate**, University of Maryland 2022–Present
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.
- Investigated toxicity in fringe online social networks.

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.

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)

PEER-
REVIEWED
PUBLICATIONS

- [1] **Erik Rye**, Dave Levin. Surveilling the Masses with Wi-Fi-Based Positioning Systems. *IEEE Security and Privacy (Oakland)*, 2024. Acceptance rate: 17%.
- [2] **Erik Rye**, Dave Levin. IPv6 Hitlists at Scale: Be Careful What You Wish For. *ACM SIGCOMM*, 2023. Acceptance rate: 20%.
- [3] **Erik Rye**, Robert Beverly. IPvSeeYou: Exploiting Leaked Identifiers in IPv6 For Street-Level Geolocation. *IEEE Security and Privacy (Oakland)*, 2023. Acceptance rate: 17%.
- [4] 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%.
- [5] **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**.
- [6] 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%.
- [7] **Erik Rye**, Jeremy Blackburn, Robert Beverly. Reading In-Between the Lines: An Analysis of Dissenter. *Internet Measurement Conference (IMC)*, 2020. Acceptance rate: 25%.
- [8] **Erik Rye**, Robert Beverly. Discovering the IPv6 Network Periphery. *Passive and Active Network Measurement Conference (PAM)*, 2020. Acceptance rate: 29%.
- [9] 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%.
- [10] **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%.
- [11] 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%.
- [12] Jeremy Martin, Travis Mayberry, Collin Donahue, Lucas Foppe, Lamont Brown, Chadwick Riggin, **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%.
- [13] 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%.
- [14] **Erik Rye**, Justin P Rohrer, Robert Beverly. Revisiting AS-Level Graph Reduction. *Workshop on Network Science for Communication Networks (NetSciCom)*, 2016. Acceptance rate: 24%.
- [15] Benjamin Davis, Raluca Gera, Gary Lazzaro, Bing Yong Lim, **Erik Rye**. The Marginal Benefit of Monitor Placement on Networks. *Conference on Complex Networks*, 2016.
- [16] Jonathan Roginski, Raluca 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.	
TALKS	[1] Erik Rye . Surveilling the Masses with Wi-Fi Positioning Systems. <i>Black Hat USA</i> . 2024.	
	[2] Erik Rye . IPvSeeYou: Exploiting Leaked Identifiers in IPv6 for Street-Level Geolocation. <i>Institute for Defense Analyses Cybersecurity Developmental Test Cross-Service Working Group (CyberDT XSWG)</i> . 2022.	
	[3] Erik Rye , Robert Beverly. IPvSeeYou: Exploiting Leaked Identifiers in IPv6 for Street-Level Geolocation. <i>Black Hat USA</i> . 2021.	
	[4] Erik Rye , Robert Beverly. Toxicity in Two Online Platforms: Dissenter and GitHub. <i>Sonoma State University</i> . 2021.	
	[5] Erik Rye . SDN as Active Measurement Infrastructure. <i>Center for Applied Internet Data Analysis (CAIDA) Active Internet Measurements Workshop (AIMS)</i> . 2017.	
	[6] Erik Rye . Emulated Router Inference Kit. <i>CAIDA Active Internet Measurements Workshop (AIMS)</i> . 2015.	
	[7] Jon Roginski, Erik Rye . Evaluating Structural Disruption in Adaptive Networks. <i>The Institute for Operations Research and the Management Sciences (INFORMS)</i> . 2014.	
BLOG POSTS	[1] Erik Rye . Defeating IPv6 Prefix Rotation Privacy. <i>APNIC Blog Guest Post</i> . 2022.	
	[2] Erik Rye . Measuring the IPv6 Network Periphery. <i>APNIC Blog Guest Post</i> . 2020.	
POPULAR MEDIA COVERAGE	[1] Brian Krebs. Why Your Wi-Fi Router Doubles as an Apple AirTag. <i>Krebs on Security</i> . 2024	
	[2] Paul Wagenseil. Your Wi-Fi Router Could Tell Everyone Where You Live — Here’s What You Can Do About It. <i>Tom’s Guide</i> . 2021	
	[3] Max Eddy. Is Your Crummy Router Giving Away Your Location? <i>PC Mag</i> . 2021.	
	[4] Thomas Claburn. Latest Phones are Great at Thwarting Wi-Fi Tracking. Other Devices, Not So Much – Study. <i>The Register</i> . 2021	
	[5] Thomas Claburn. MAC Randomization: A Massive Failure that Leaves iPhones, Android Mobes Open to Tracking. <i>The Register</i> . 2017	
ADVISING	[1] <i>Analysis of EUI-64-based Addressing and Associated Vulnerabilities</i> , Kirstin Thordarson, Naval Postgraduate School, Masters Thesis, 2020. Second reader.	
	[2] <i>Sunup: ICMP Timestamp Behaviors in Fingerprinting</i> , Terrence Kvitchko, Naval Postgraduate School, Masters Thesis, 2019. Second reader.	
SERVICE	Program Committee , Internet Measurement Conference (IMC) 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 HONORS	Distinguished Reviewer , Internet Measurement Conference (IMC) 2024	
	Copernicus Award for Contributions to Naval Cyber Operations , AFCEA International 2022	
	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
Graduated with Honors in Mathematics, US Naval Academy

2015
2008