

James K Holland

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SUMMARY	Computer security researcher with expertise in applying machine learning to computer security challenges. Particularly experienced in developing traffic analysis attacks and defenses for privacy and anonymity tools such as Tor.	
EDUCATION	University of Minnesota , Minneapolis, MN Ph.D. in Computer Science 3M Fellowship recipient	Fall 2019 - Present
	University of Notre Dame , Notre Dame, IN Bachelor of Science, Computer Science GPA: 3.76/4.0, cum laude	Fall 2015 - Spring 2019
RESEARCH	Graduate Research Assistant - Hopper Lab <i>Security and privacy research at the University of Minnesota</i> <ul style="list-style-type: none">Created a novel website fingerprinting defense to protect the privacy of Tor usersImplemented and improved upon existing flow correlation attacks and defensesPublished and presented research findings at multiple conferences	Fall 2019 - Present
	Undergraduate Researcher - NetHealth Project <i>Social network study conducted at the University of Notre Dame</i> <ul style="list-style-type: none">Investigated and presented trends in student activity, health, and social networksCreated a data analysis pipeline to improve research efficiency and reproducibility	Fall 2018 - Spring 2019
INTERNSHIPS	Cybersecurity Research - Sandia National Laboratories <i>Applied research internship in St. Paul, MN</i> <ul style="list-style-type: none">Analyzed the security guarantees of existing internet privacy toolsAssisted in efforts to improve internal cybersecurity tools	Summer 2023 - Present
	Software Data Engineer Intern - Milliman PRM Analytics <i>Summer internship in Indianapolis, IN</i> <ul style="list-style-type: none">Improved the data analysis pipeline with bug fixes and feature additionsUsed PySpark batch processing to create reports describing client resource utilization	Summers 2018, 2019
PUBLICATIONS	James K Holland , Jason Carpenter, Se Eun Oh, Nicholas Hopper. "DeTorrent: An Adversarial Zero-delay Traffic Analysis Defense." Proceedings on Privacy Enhancing Technologies 2024.	
	Nate Matthews, James K Holland , Se Eun Oh, Mohammad Saidur Rahman, Matthew Wright, Nick Hopper. "SoK: A Critical Evaluation of Efficient Website Fingerprinting Defenses." 2023 IEEE Symposium on Security and Privacy.	
	Ethan Witwer, James K Holland , Nicholas Hopper. "Padding-only defenses add delay in Tor." Proceedings of the 21st Workshop on Privacy in the Electronic Society (2022).	
	James K Holland , Nicholas Hopper. "RegulaTor: A Straightforward Website Fingerprinting Defense." Proceedings on Privacy Enhancing Technologies 2022.	
	Se Eun Oh, Taiji Yang, Nate Matthews, James K Holland , Mohammad Saidur Rahman, Nicholas Hopper, Matthew Wright. "DeepCoFFEA: Improved Flow Correlation Attacks on Tor via Metric Learning and Amplification." 2022 IEEE Symposium on Security and Privacy.	