# Noah T. Curran

PhD Candidate · Computer Science & Engineering

*University of Michigan, 2260 Hayward Street, Ann Arbor, MI 48109*

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## Education

**University of Michigan** — *Ann Arbor, Michigan*

PhD Computer Science & Engineering — *Aug. 2020 - present*

- Advisor: Kang G. Shin

**University of Michigan** — *Ann Arbor, Michigan*

MS Computer Science & Engineering — *Aug. 2020 - Dec. 2021*

- Advisor: Kang G. Shin

**Purdue University** — *West Lafayette, Indiana*

BS Computer Science (Hons.) · BS Mathematics — *Aug. 2017 - May 2020*

- Advisors: Yung-Hsiang Lu (Purdue), George Thiruvathukal (Loyola Chicago), and Felix Lin (Purdue, now at UVA)
- Most Outstanding Senior in Computer Science

## Professional Experience

**University of Michigan, Dept. of Computer Science and Engineering** — *Ann Arbor, MI*

Graduate Student Research Assistant — *Aug. 2020 - present*

- Investigated the security and reliability of semi-autonomous vehicles (SAVs); focusing on answering the question of who to trust when autonomous and manual control of SAVs are in conflict.
- Conducted research to utilize smartphone sensors to validate the correctness of vehicle sensors even when the smartphone sensing data is noisy from physical use. Accepted for presentation at CNS '23.
- Discovered inconsistencies in the Boeing 737-MAX MCAS that may allow dangerous control and devised an alternative, safer method for commanding the pitch control of an aircraft. Accepted for presentation at EMSOFT '24.

**Toyota Research Institute of North American, Future Research Division** — *Ann Arbor, MI*

Cyber-Physical Systems Research Intern — *May 2023 - Aug. 2023*

- Devised a solution for optimizing the locations of sensors on an autonomous vehicle to maximize chosen metrics, such as safety or cost.
- Further details withheld due to an ongoing patenting process.

**Lear Corporation, Cybersecurity Division** — *Ann Arbor, MI*

Cybersecurity Research Intern — *May 2022 - Jan. 2023*

- Developed an anti-dooring function for vehicles that passively uses pedestrian BLE devices.
- Published and presented research at VehicleSec '23, winning Best Short/WIP Paper Runner-Up.

**Purdue University, Dept. of Electrical and Computer Engineering** — *West Lafayette, IN*

Undergraduate Research Assistant — *Aug. 2018 - May 2020*

- Led research efforts for determining the effectiveness of code review for research software and developed and presented three workshops on utilizing code review in research.
- Insights provided by my leadership built the foundations for a collaboration with Google ($100,000) and three successful NSF proposals amounting in a total of $1,157,496.
- Developed a partial JPEG decoding tool to enable research on secure tensor processing within devices with small memory.

**Lawrence Livermore National Laboratory, NARAC** — *Livermore, CA*

Software Engineering Intern — *May 2018 - Aug. 2018*

- Developed a front-end platform for atmospheric scientists at NARAC to perform dispersion model calculations for particles (e.g., smoke, radioactive, aerosol) released into the atmosphere.
- Used Angular and Node.js to modernize existing Java-based applications.

## Publications

Equal contribution denoted with *

**Noah T. Curran**, Thomas W. Kennings, and Kang G. Shin. 2024. *Analysis and Prevention of MCAS-Induced Crashes*. ACM SIGBED International Conference on Embedded Software (EMSOFT '24).
(Acceptance rate: 28/129 = 21.7%) · [Best Paper Finalist] · [PDF] · [Code]

**Noah T. Curran**, Minkyoung Cho, Ryan Feng, Liangkai Liu, Brian Jay Tang, Pedram MohajerAnsari, Alkim Domeke, Mert D. Pesé, and Kang G. Shin. 2024. *Achieving the Safety and Security of the End-to-End AV Pipeline*. 1st Cyber Security in Cars Workshop (CSCS '24).
[Co-Located with CCS '24] · [PDF]

**Noah T. Curran***, Arun Ganesan*, Mert D. Pesé, Kang G. Shin. 2023. *Using Phone Sensors to Augment Vehicle Reliability*. IEEE Conference on Communications and Network Security (CNS '23).
(Acceptance rate: 32/112 = 28.6%) · [PDF]

**Noah T. Curran**, William Hass, Kang G. Shin, Lars Wolleschensky, Rekha Singoria, Isaac Snellgrove, Ran Tao. 2023. *WIP: Augmenting Vehicle Safety With Passive BLE*. ISOC Symposium on Vehicle Security and Privacy (VehicleSec '23).
(Acceptance rate: 6/16 = 37.5%) · [Best WIP Paper Runner-Up] · [PDF]

Isha Ghodgaonkar, Abhinav Goel, Fischer Bordwell, Caleb Tung, Sara Aghajanzadeh, **Noah T. Curran**, Ryan Chen, Kaiwen Yu, Sneha Mahapatra, Vishnu Banna, Gore Kao, Kate Lee, Xiao Hu, Nick Eliopolous, Akhil Chinnakotla, Damini Rijhwani, Ashley Kim, Aditya Chakraborty, Mark Daniel Ward, Yung-Hsiang Lu, George K. Thiruvathukal. 2020. *Observing Responses to the COVID-19 Pandemic using Worldwide Network Cameras*. arXiv preprint arXiv:2005.09091.
[PDF]

## Awards, Fellowships, & Grants

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| 2024 | **Student Travel Grant**, ESWEEK 2024 | *$ 1,500* |
| | **Student Travel Grant**, Rackham, University of Michigan | *$ 900* |
| | **Best Paper Finalist**, EMSOFT 2024 | |
| 2023 | **Student Travel Grant**, CNS 2023 | *$ 1,200* |
| | **Best WIP Paper Runner-Up**, VehicleSec 2023 | |
| | **Student Travel Grant**, VehicleSec 2023 | *$ 650* |
| | **Student Travel Grant**, Rackham, University of Michigan | *$ 900* |
| 2022 | **NSF Graduate Research Fellowship Program Honorable Mention**, NSF | |
| 2020 | **Most Outstanding Senior**, Dept. of Computer Science, Purdue University | *$ 500* |
| 2019 | **NSF SaTC PI Meeting Student Travel Grant**, NSF | *$ 1,500* |
| | **NSF REU**, Purdue University | *$ 5,000* |
| 2017 | **Presidential Scholarship**, Purdue University | *$ 5,000 / yr.* |

## Mentoring

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| 2024 | **Katelyn Abellera**, Undergrad, University of Michigan |
| 2024 | **Porvesh Balasubramanian**, Undergrad, University of Michigan |
| 2023 | **Yinghui He**, Undergrad, University of Michigan ⟶ Princeton PhD |
| 2022-2023 | **Thomas Kennings**, Undergrad, University of Michigan ⟶ NASA Glenn Research Center |
| 2022 | **Liuqing Yang**, Undergrad, University of Michigan ⟶ Splunk SWE |