ETHAN LEW

https://eth0lew.com

TECHNICAL SKILLS

Research Experience	Formal Verification, Cyber-physical Systems, Data-driven Controls
Programming	Python, R, Rust, C/C++, LaTeX, Bash
Libraries/Frameworks	PyTorch, Tensorflow, Apache Spark, Gurobi, ONNX

WORK EXPERIENCE

P-1.ai 2024-Present
Senior Systems Engineer

· Building Artificial General Engineering Intelligence.

Galois, Inc., 421 SW 6th Ave, Portland, OR 97204 2019-2024
Research Engineer

· Awarded a Phase I SBIR grant on vehicle autonomy and performed as a principal investigator (PI) on the project.
· Excelled in developing research methodologies, writing sophisticated software prototypes, and exceeding project deliverables.
· Contributed significant research and engineering to high-profile DARPA programs at the company: SSITH (2019-2021), Assured Autonomy (2019-2022), SDCPS (2021-2023), Space-BACN (2022-2023), and FIRE (2024-Present).

Johns Hopkins APL, 11100 Johns Hopkins Rd, Laurel, MD 20723 2019
Electrical Engineering Intern

· Research Projects: troposcatter communication system feasibility, FDTD solver for bodies of revolution, and methods and benchmarks for an adaptive radar resource manager (RRM).

Summit Wireless Technologies, 20575 Von Neumann Dr., Beaverton, OR 97006 2018-2019
Electrical Engineering Intern

· Contributed engineering across several teams including the development of a RF power meter, a Linux wireless driver, and the wireless audio stack core.

Portland State University, 1825 SW Broadway, Portland, OR 97201 2017
Climate Research Intern

· Research Project: *Sensitivity of Global Methane Bayesian Inversion to Surface Observation Data Sets and Chemical-Transport Model Resolution.*
· Presented project at the Center for Climate and Aerosol Research (CCAR) symposium, Council on Undergraduate Research (CUR) symposium, and the American Geophysical Union (AGU) Fall Meeting.

EDUCATION

Portland State University, OR *June 2016 - June 2019*
BS Electrical Engineering *Summa Cum Laude* GPA: 4.00
Portland Community College, OR *March 2015 - June 2017*
Transfer Program GPA: 4.00

AWARDS

Generalized RAcing Intelligence Competition (GRAIC) 2022
1st Place Head-to-Head Category *CPS-IoT Week*

Electrical and Computer Engineering Capstone Poster Competition 2019
Best Overall Project *PSU ECE*

Intel Compute Stick Challenge 2016
1st Place *Intel*

FUNDED PROJECTS

SBIR: Phase I: RHEIA-F: Robust High-fidelity Energy-Informed Autonomy Framework 2024
*PI: **Ethan Lew**; Co-PI: Nicola Bezzo* *AFRL Funded, Galois Inc. Award: $179,934*

· We propose the Robust High-fidelity Energy-Informed Autonomy Framework (RHEIA-F), an advanced energy-aware mission planning framework for unmanned aerial systems (UAS). This framework integrates comprehensive energy management into UAS missions, providing both off-board and on-board components. These capabilities are directly transferable to other Department of Defense (DoD) embedded systems, autonomous vehicles, and space systems.

PROGRAM COMMITTEES

26th ACM International Conference on Hybrid Systems: Computation and Control 2021
Repeatability Evaluation Program Committee *HSCC 2023*

25th ACM International Conference on Hybrid Systems: Computation and Control 2021
Repeatability Evaluation Program Committee *HSCC 2022*

7th IFAC Conference on Analysis and Design of Hybrid Systems 2021
Repeatability Evaluation Program Committee *ADHS 2021*

24th ACM International Conference on Hybrid Systems: Computation and Control 2021
Repeatability Evaluation Program Committee *HSCC 2021*

PEER-REVIEWED PUBLICATIONS

(authors alphabetical) Bak, S., Bogomolov, S., Hencey, B., Kochdumper, N., **Lew, E.**, and Potomkin, K. (2025a). Reachability of koopman linearized systems using explicit kernel approximation and polynomial zonotope refinement. *Formal Methods in System Design*, pages 1–27

(authors alphabetical) Bak, S., Hekal, A., Kochdumper, N., **Lew, Ethan**, Mata, A., and Rahmati, A. (2025b). Fast koopman surrogate falsification using linear relaxations and weights. In Akshay, S., Niemetz, A., and Sankaranarayanan, S., editors, *Automated Technology for Verification and Analysis*, pages 234–255, Cham. Springer Nature Switzerland

Khandait, T., Formica, F., Arcaini, P., Chotaliya, S., Fainekos, G., Hekal, A., Kundu, A., **Lew, E.**, Loreti, M., Menghi, C., et al. (2024). Arch-comp 2024 category report: Falsification. In *Proceedings of the 11th Int. Workshop on Applied*, volume 103, pages 122–144

(authors alphabetical) Abowd, J. M., Adams, T., Ashmead, R., Darais, D., Dey, S., Garfinkel, S. L., Goldschlag, N., Kifer, D., Leclerc, P., **Lew, E.**, et al. (2023). The 2010 census confidentiality protections failed, here's how and why. Technical report, National Bureau of Economic Research

(authors alphabetical) Bak, S., Bogomolov, S., Hekal, A., Kochdumper, N., **Lew, E.**, Mata, A., and Rahmati, A. (2024). Falsification using reachability of surrogate koopman models. In *Proceedings of the 27th ACM International Conference on Hybrid Systems: Computation and Control*, pages 1–13

Lahouel, K., Wells, M., Rielly, V., **Lew, E.**, Lovitz, D., and Jedynak, B. M. (2024). Learning non-parametric ordinary differential equations from noisy data. *Journal of Computational Physics*, page 112971

Lew, E., Hekal, A., Potomkin, K., Kochdumper, N., Hencey, B., Bak, S., and Bogomolov, S. (2023). Autokoopman: A toolbox for automated system identification via koopman operator linearization. In André, É. and Sun, J., editors, *Automated Technology for Verification and Analysis*, pages 237–250, Cham. Springer Nature Switzerland

Davis, E., Dey, S., Karvonen, A., **Lew, E.**, Quick, D., Shyamshankar, P., Hille, T., and Lebeau, M. (2023). Leveraging manifold learning and relationship equity management for symbiotic explainable artificial intelligence. In *International Conference on Applied Human Factors and Ergonomics*, pages 490–510. AHFE International

(authors alphabetical) Bak, S., Bogomolov, S., Hencey, B., Kochdumper, N., **Lew, E.**, and Potomkin, K. (2022). Reachability of koopman linearized systems using random fourier feature observables and polynomial zonotope refinement. In *International Conference on Computer Aided Verification*, pages 490–510. Springer