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

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

· 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), and Space-BACN (2022-Present).
· Demonstrated expertise in system analysis and auditing, particularly in relation to the US Census Bureau's Disclosure Avoidance System (2021-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

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*

PUBLICATIONS

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

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

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*

PROJECTS

AutoKoopman: A Toolbox for Automated System Identification via Koopman Operator Linearization 2022-Present

· AutoKoopman is a python library for the use of Koopman operator methods for data-driven dynamical systems analysis and control. The library has convenient functions to learn systems using a few lines of code. It has a variety of linearization methods under shared class interfaces. These methods are pluggable into hyperparameter optimizers which can automate the process of model optimization.

Control System Analysis Framework (CSAF) 2019-Present

· CSAF is a framework to minimize the effort required to evaluate, implement, and verify controller design (classical and learning enabled) with respect to the system dynamics.

BESSPIN Automotive Demonstrator 2020-2021

· The BESSPIN CyberPhysical Demonstrator was developed under the DARPA SSITH Program. The demonstrator is intended to showcase the use of the SSITH secure hardware technology in a passenger vehicle. Visitors will experience driving a vehicle as it is being hacked, and the process of hacking an unprotected and a SSITH protected car.