

# ETHAN LEW

<https://eth01ew.com>

## EDUCATION

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<b>Portland State University, OR</b>	<i>June 2016 - June 2019</i>
BS Electrical Engineering	GPA: 4.00
<b>Portland Community College, OR</b>	<i>March 2015 - June 2017</i>
Transfer Program	GPA: 4.00

## TECHNICAL SKILLS

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<b>Research Experience</b>	Formal Verification, Cyber-physical Systems, Data-driven Controls
<b>Programming</b>	Python, R, Rust, C/C++, L <sup>A</sup> T <sub>E</sub> X, Bash
<b>Libraries/Frameworks</b>	PyTorch, Tensorflow, Apache Spark, Gurobi, ONNX

## WORK EXPERIENCE

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<b>Galois, Inc., 421 SW 6th Ave, Portland, OR 97204</b>	2019-Present
<i>Research Engineer</i>	

- Excel in developing research methodologies, writing sophisticated software prototypes, and exceeding project deliverables.
- Contribute significant research and engineering to company projects on high-profile DARPA programs: SSITH (2019-2021), Assured Autonomy (2019-2022), ESSENCE (2021-2023), and Space BACN (2022-Present).
- Demonstrate expertise in system analysis and auditing, particularly in relation to the US Census Bureau's Disclosure Avoidance System (2021-Present).

<b>Johns Hopkins APL, 11100 Johns Hopkins Rd, Laurel, MD 20723</b>	2019
<i>Electrical Engineering Intern</i>	

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

<b>Portland State University, 1825 SW Broadway, Portland, OR 97201</b>	2017
<i>Climate Research Intern</i>	

- 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.

## PROGRAM COMMITTEES

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<b>26th ACM International Conference on Hybrid Systems: Computation and Control 2021</b>	
<i>Repeatability Evaluation Program Committee</i>	<i>HSCC 2023</i>

<b>25th ACM International Conference on Hybrid Systems: Computation and Control 2021</b>	
<i>Repeatability Evaluation Program Committee</i>	<i>HSCC 2022</i>

<b>7th IFAC Conference on Analysis and Design of Hybrid Systems</b>	2021
<i>Repeatability Evaluation Program Committee</i>	<i>ADHS 2021</i>

<b>24th ACM International Conference on Hybrid Systems: Computation and Control 2021</b>	
<i>Repeatability Evaluation Program Committee</i>	<i>HSCC 2021</i>

## PUBLICATIONS

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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

## PROJECTS

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### **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.