Ian Connick Covert

Curriculum Vitae

Paul G. Allen School of Computer Science & Engineering
University of Washington
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Education

University of Washington, Seattle, WA
Ph.D. in Computer Science, Expected in December 2022
Advisor: Su-In Lee

Columbia University, New York, NY
B.A. in Math/Statistics, B.A. in Computer Science, May 2017
Summa Cum Laude, Phi Beta Kappa

French American International High School, San Francisco, CA
International Baccalaureate Diploma (Bilingual in French), June 2013

Employment and Research Experience

Research Assistant, AIMS Lab, University of Washington — January 2019-Present
Advisor: Su-In Lee
Explainable AI and feature selection for black-box machine learning models.

Quantitative Research Intern, Citadel Securities — June 2022-Present
Systematic options research.

Student Researcher, Google AI Healthcare — June 2018-March 2019
Interpretable, topologically-aware deep learning for EEG seizure detection.

Research Assistant, MODE Lab, University of Washington September 2017-December 2018
Advisor: Emily Fox
Nonlinear Granger causality discovery with neural networks.

Investment Banking Strategist Summer Analyst, Goldman Sachs June 2016-August 2016
Interest rate derivatives credit risk pricing, data-driven share allocation for equity issuances.

Undergraduate Research Assistant, Columbia University February 2016-May 2017
Advisor: Liam Paninski
Neuron structure discovery from calcium imaging data.

Investment Banking Summer Analyst, Société Générale June 2015-August 2015
Manager: Barry Cohen
Interest rates derivatives pricing, swap market volatility research.

Publications and Preprints

Ian Covert*, Chanwoo Kim*, Su-In Lee. "Learning to Estimate Shapley Values with Vision Transformers." Preprint.

Ian Covert, Rohan Gala, Tim Wang, Karel Svoboda, Uygar Sümbül, Su-In Lee. "PROPOSE: Predictive and Robust Probe Selection for Spatial Transcriptomics." Preprint.

Neil Jethani*, Mukund Sudarshan*, **Ian Covert***, Su-In Lee, Rajesh Ranganath. "FastSHAP: Real-Time Shapley Value Estimation." International Conference on Learning Representations (ICLR) 2022.

Ian Covert, Scott Lundberg, Su-In Lee. "Explaining by Removing: A Unified Framework for Model Explanation." Journal of Machine Learning Research (JMLR) 2021.

Ivan Evtimov, **Ian Covert**, Aditya Kusupati, Tadayoshi Kohno. "Disrupting Model Training with Adversarial Shortcuts." International Conference on Machine Learning (ICML) Adversarial ML Workshop 2021.

Ian Covert, Su-In Lee. "Improving KernelSHAP: Practical Shapley Value Estimation via Linear Regression." Artificial Intelligence and Statistics (AISTATS) 2020.

Ian Covert, Scott Lundberg, Su-In Lee. "Feature Removal Is A Unifying Principle For Model Explanation Methods." Neural Information Processing Systems (NeurIPS) Machine Learning Retrospectives, Surveys & Meta-Analyses (ML-RSA) Workshop 2020.

Ian Covert, Scott Lundberg, Su-In Lee. "Understanding Global Feature Contributions With Additive Importance Measures." Neural Information Processing Systems (NeurIPS) 2020.

Ian Covert, Uygar Sümbül, Su-In Lee. "Deep Unsupervised Feature Selection." Preprint.

Alex Tank*, **Ian Covert***, Nicholas Foti, Ali Shojaie, Emily Fox. "Neural Granger Causality." Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2021.

Ian Covert, Scott Lundberg, Su-In Lee. "Shapley Feature Utility." Machine Learning in Computational Biology (MLCB) Workshop 2019.

Ian Covert, Uygar Sümbül, Su-In Lee. "Principal Genes Selection." Machine Learning in Computational Biology (MLCB) Workshop 2019.

Ian Covert, Balu Krishnan, Imad Njam, Jiening Zhan, Matthew Shore, John Hixson, Ming Jack Po. "Temporal Graph Convolutional Networks for Automatic Seizure Detection." Machine Learning for Healthcare (MLHC) 2019.

Jiening Zhan, Hector Yee, **Ian Covert**, Jiang Wu, Albee Ling, Matthew Shore, Eric Teasley, Rebecca Davies, Tiffany Kung, Justin Tansuwan, John Hixson and Ming Jack Po. "EEG Seizure Detection via Deep Neural Networks: Application and Interpretation." Neural Information Processing Systems (NeurIPS) Machine Learning for Health (ML4H) Workshop 2018.

Alex Tank, **Ian Covert**, Nicholas Foti, Ali Shojaie, Emily Fox. "An Interpretable and Sparse Neural Network Model for Nonlinear Granger Causality Discovery." Neural Information Processing Systems (NeurIPS) Time Series Workshop 2017.

Invited Talks

- NASA Ames Research Center, March 2022
- Digital Humanities at UT Austin, March 2022
- Arthur AI, December 2021
- Old Dominion University Guest Lecture, November 2021
- University of Washington Colloquium, October 2021
- Hong Kong Machine Learning, September 2021
- Data Science Alliance & San Diego Machine Learning, April 2021
- Zou Lab, Stanford University, April 2021
- BigInsight (Norwegian AI Center), March 2021
- Kundaje Lab, Stanford University, March 2021
- Fiddler Labs, February 2021
- Abu Dhabi Machine Learning, January 2021
- Aggregate Intellect, December 2020
- Quant University, December 2020

Conference & Journal Reviewing

- Neural Information Processing Systems (NeurIPS) 2018, 2019, 2020, 2021, 2022
- International Conference on Learning Representations (ICLR) 2021, 2022
- International Conference on Machine Learning (ICML) 2020, 2021, 2022
- Artificial Intelligence and Statistics (AISTATS) 2021
- Machine Learning for Healthcare (MLHC) 2020, 2021, 2022
- Machine Learning in Computational Biology (MLCB) 2019, 2020, 2021
- Journal of Artificial Intelligence (Elsevier), Patterns (Cell), Machine Learning (Springer)

Teaching

Co-instructor, Explainable AI (CSE P 590), University of Washington — Spring 2022
Taught with: Su-In Lee
Delivered lectures; designed course contents including syllabus, slides and homework assignments.

Teaching assistant, Convex Optimization (EE578), University of Washington — Winter 2019
Professor: Maryam Fazel
Taught biweekly review sessions, taught several lectures, wrote exam questions, graded assignments.

Instructor, Code IHS, French American International High School — Winter 2017
Instructors: Ian Covert, Sumner Hearth, Pierre-Alexander Low
Designed and taught a two-week computer science course for high school students.

Awards

- Top reviewer at ICML 2020, ICLR 2021, NeurIPS 2021, ICLR 2022
- Upton Fellowship, Princeton University, 2017 (Did not attend)
- Computer Science Excellence Fellowship, UIUC, 2017 (Did not attend)
- Computer Science Faculty First Year Fellowship, UMass Amherst, 2017 (Did not attend)
- Summa Cum Laude, Columbia University, 2017
- Phi Beta Kappa, Columbia University, 2017
- Computer Science Award for Academic Excellence, Columbia University, 2017
- Presidential Scholar Nominee, 2013
- President's Award for Academic Excellence, 2013

Service and Volunteering

- Graduate Applications Reader, University of Washington, 2020-2021
- Computer Science Ph.D. Mentoring, University of Washington, 2018-2019
- Visit Days Coordination, University of Washington, 2018
- Undergraduate Admissions Interviewing, Columbia University, 2018-2020
- Computer Science Undergraduate Mentoring, Columbia University, 2016-2017