# PHILIP SOLIMINE

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## SUMMARY

I am an experienced scientist, with dual PhD/MS degrees in Economics and Computational Science. I work in marketing measurement, inference, and optimization at Chewy. I have an extensive research background in platform design, market design, causal machine learning, experimentation, and optimal control. Prior to joining Chewy I worked at UBC, conducting research and instructing undergraduate, masters, and PhD-level courses on quantitative and computational methods in economics. My published research covers topics ranging from computational neuroscience to digital platform design and infrastructure investment.

## EXPERIENCE

**Chewy, Inc.**

· Data Scientist - Marketing Science & Operations — 2025 - Present

**Vancouver School of Economics, University of British Columbia**

· Postdoctoral Fellow - Centre for Innovative Data in Economics Research — 2022 - 2025

**Departments of Economics and Scientific Computing, Florida State University**

· Charles & Persis Rockwood Fellow — 2017-2022
· L. Charles Hilton Fellow — 2020-2022
· Research Associate - XSFS Experimental Social Sciences Lab — 2016-2017

## EDUCATION

**Florida State University**

**PhD Economics** — July 2022
Dissertation: Economic behavior in dynamic networks
*Committee: Matthew Gentry (co-chair), Luke Boosey (co-chair), Cynthia Yang, R. Mark Isaac*

**MS Computational Science** — July 2022
Thesis: Optimal control for networked moments: Theory and applications to network-based targeting
*Committee: Anke Meyer-Baese (chair), Max Gunzburger, Paul Beaumont*

**MS Economics** — Dec 2018
**BA Mathematics** (minor in Physics) — Dec 2016
**BS Economics** (minor in Computer Science) — Dec 2016

## PUBLICATIONS

1. **Solimine, P.** and Schrimpf, P. (2025). Investment and misallocation in infrastructure networks: The case of U.S. natural gas pipelines. *Proceedings of the 26th ACM Conference on Economics and Computation (EC)*. p. 8.
2. **Solimine, P.** and Isaac, RM. (2023). Reputation and market structure in experimental platforms. *Journal of Economic Behavior & Organization*, 205, 528-559.
3. Dunkle, B., Isaac, RM., and **Solimine, P.** (2022). The robustness of lemons in experimental markets. *Experimental Law and Economics.* Research in Experimental Economics, Vol. 21.
4. **Solimine, P.** and Meyer-Baese, A. (2022). Input design for the optimal control of networked moments. *Proceedings of the 61st IEEE Conference on Decision and Control (CDC).* 5894-5901.
5. **Solimine, PC.** (2021). Network controllability metrics for corruption research. *Corruption Networks.* Understanding Complex Systems. Springer.

6. **Solimine, PC.** (2020). Political corruption and the congestion of controllability in social networks. *Applied Network Science* (Vol. 5, p. 23).

7. Tahmassebi, A., Mohebali, B., **Solimine, P.**, Meyer-Baese, U., Pinker, K., & Meyer-Baese, A. (2019, May). Model reduction of structural biological networks by cycle removal. *Proceedings of the SPIE: Smart Biomedical and Physiological Sensor Technology XVI* (Vol. 11020, pp. 105-112).

8. Tahmassebi, A., Mohebali, B., Meyer-Baese, L., **Solimine, P.**, Pinker, K., & Meyer-Baese, A. (2019, May). Determining driver nodes in dynamic signed biological networks. *Proceedings of the SPIE: Smart Biomedical and Physiological Sensor Technology XVI* (Vol. 11020, pp. 53-60).

## WORKING PAPERS

· Investment and misallocation in infrastructure networks (with Paul Schrimpf)

· Coarse targeting in social networks (with Wei Li)

· Strategic formation of collaborative networks (with Luke Boosey) (*submitted*)

· Pricing, barriers to entry, and network effects with dynamic community structure (with Angelo Mele)

· Optimal control for networked moments (R&R at *IEEE Transactions on Control of Network Systems*)

· Model recovery and competition in prediction markets

## SKILLS AND TECHNICAL EXPERTISE

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|---|---|
| **Programming Languages** | Python, C++, Julia, R, SQL, Matlab |
| **Machine Learning** | JAX, PyTorch, TensorFlow, PyMC |
| **Big Data Tools** | Spark, Hadoop, MPI, CUDA, OpenMP |
| **Specialties** | Networks, Machine Learning, AI, Causal Inference, Structural Estimation, Auctions, Experimentation, Industrial Organization, Dynamic Games |
| **Software Tools** | Git, Docker, Poetry, VS Code, JIRA |

## PROJECTS

**PyRiesz: An open source PyTorch implementation of the multitasking deep RieszNet architecture for Auto-DML causal effects estimation.**

Created and maintaned an open-source PyTorch implementation of the multitasking deep RieszNet architecture, and high-dimensional LASSO regression methods to automatically debias machine learning models by learning Riesz representers.

**Robustness and regulation in the face of adversarial discord** (with Wei Li and Jesse Perla)

Applied control theory to study network robustness and manipulation. Developed tools to counter manipulation through information design and design-based passive moderation in networked platforms.

**Pricing network effects with endogenous community structure** (with Angelo Mele)

Examined pricing and user engagement dynamics on a digital platform using a large dataset. Estimated demand with dynamic network effects through a network formation game model using variational approximations and mean-field game theory.

**Viral dynamics and coordinated promotion in digital platforms** (with Matthew Gentry)

Studied the impact of pricing strategies on consumer dynamics and demand in the video game industry. Applied computer vision and data mining to decompose game features. Developed a structural econometric model for demand dynamics in competitive video game markets.

## TEACHING

### University of British Columbia

· **ECON 323 Quantitative Economic Modeling and Data Science** 2022-2025 (×10 sections)
Topics covered: Programming fundamentals in Python, Data engineering with Pandas, Data science tools, Applied linear algebra, Numerical methods, Visualization, Machine learning, Network economics

· **ECON 622 Computational Economics (PhD)** 2023
Topics covered: Graphical models, Modern MCMC methods, Gibbs sampling, Probabilistic programming, Frequentist and Bayesian inference, Dynamic discrete choice, Machine learning theory, NLP

· **ECON 526 Quantitative Economics (MA)** 2023
Topics covered: Causal inference, Research design, Statistical inference, Graphical models, Experimentation

### Florida State University

· **ECO 4400 Games and Decisions** 2020 (online), 2021
Topics covered: Decision theory, Optimization, Decision under risk, Nash equilibrium, Stategy, Industrial organization, Cournot competition, Bertrand competition, Dynamic games, Auctions

· **ECO 2023 Principles of Microeconomics** 2019
Topics covered: Opportunity cost, Marginal cost and marginal benefit, Supply and demand, Revenue and cost curves, Profits and utility, Equilibrium, Introduction to game theory

· **ECO 5434 Analysis of Economic Data (MS) (guest lecturer)** 2022
Topics covered: Social and economic networks

## CONFERENCE TALKS & PRESENTATIONS

· **2025**: University of Washington (invited), Bank of Canada (invited), Access to Cash and Financial Services Workshop (invited), ACM EC Conference on Economics and Computing

· **2024**: UBC Sauder Industrial Organization Workshop, Conference of Network Science in Economics, INFORMS

· **2023**: International Industrial Organization Conference; UBC Econometrics Seminar

· **2022**: IEEE Conference on Decision and Control, UBC Econometrics Group (invited); Conference of Network Science in Economics (×2); FSU Computational Xposition; FSU Quantitative Methods Group; FSU Microeconomic Theory Seminar

· **2021**: Conference of Network Science in Economics; Economic Science Association Job-Market Candidates Seminar; North American Meeting of the Economic Science Association; Networks 2021 (NetSci and Sunbelt); Conference of the Southern Economic Association; FSU Experimental Seminar

· **2020**: NetSci 2020 (invited); Network Science in Economics; Global Meeting of the Economic Science Association; FSU Computational Xposition; FSU Experimental Seminar

· **2019**: Caltech Symposium in Honor of Charles R. Plott (invited); Conference of the Southern Economic Association; NetSci 2019; FSU Experimental Seminar

## PROFESSIONAL SERVICE

### Referee Reports

· Review of Economics & Statistics
· Journal of Economic Behavior & Organization (×2)
· International Journal of Industrial Organization (×3)
· Economics, Applied Network Science, Government & Opposition, Economics Letters