






# ARNAV SOOD

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## OVERVIEW

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I am a researcher and programmer working in computational economics. My projects include codebases for academic papers, open-source software packages, and standalone lectures. I have extensive experience in differential equations, Julia, and PyTorch.

## EMPLOYMENT HISTORY

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Freelance Researcher/Programmer, <b>Varied Clients</b> Clients Include: UBC, QuantEcon	Jul. 2020 — Present
Predoctoral Researcher, <b>University of British Columbia</b> Advisor: Prof. Jesse Perla	Jun. 2018 — Jun. 2020
Lead Developer, <b>QuantEcon</b> References: Prof. John Stachurski, Dr. Matt McKay, Dr. Chase Coleman	Jan. 2019 — Present

## EDUCATION

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<b>University of British Columbia</b> Selected Courses (MS and BA.)	Jun. 2018 — Jun. 2020
<b>New York University</b> Bachelor of Arts (Math.) Minors in Economics, Philosophy	Sep. 2014 — May 2018

## ACADEMIC PUBLICATIONS

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<b>Exploiting Symmetry in High-Dimensional Dynamic Programming</b> (with Jesse Perla, Mahdi Kahou, Jesús Fernández-Villaverde)	In-Progress
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## OTHER PUBLICATIONS

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<b>Optimal Stopping and Linear Complementarity</b> (with Jesse Perla)	QuantEcon Notes
<b>Case Study: Recidivism</b> (with Paul Schrimpf, Chase Coleman, Spencer Lyon, Jesse Perla)	QuantEcon Datascience

## SOFTWARE

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**PerlaTonettiWaugh.jl**  
Codebase for AER paper. Implements a forward-looking differential-algebraic equation (DAE) system in steady state and along transitions.

**KnowledgeDiffusionSimulations.jl**  
Codebase for knowledge diffusion simulations. Implements jump diffusion equations and tracks evolution of aggergate indices.

### **QuantEcon Julia Lectures**

Wrote new lectures, overhauled code, deployed to cloud backends, and supervised RAs.

### **QuantEcon/Expectations.jl**

Uses Gaussian quadrature to take expectations for increased clarity, speed, and accuracy.

### **QuantEcon/InstantiateFromURL.jl**

Allows Julia Jupyter notebooks to run anywhere with proper package versions. Used in QuantEcon lectures.

### **VSE Syzygy JupyterHub**

Worked with Dr. Ian Allison of PIMS to maintain a JupyterHub server for faculty and student use. Deployed from Docker for reproducible setup.

## TALKS AND POSTERS

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### **Dependency-Aware Jupyter Notebooks**

JuliaCon 2020

### **Extending Distributions with Expectations.jl**

JuliaCon 2020

## TEACHING

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### **University of British Columbia**

Jun. 2018 — Jun. 2020

Guest Lecturer, ECON 622 (2019) and ECON 628 (2018)

- Prepared and taught occasional lectures to PhD students on software design in Julia.
- Helped students with assignment difficulties.

### **(MIT, Columbia, Princeton, NYU) Splash!**

Sep. 2014 — Jun. 2018

Volunteer Teacher

- Designed and delivered short technical courses at various “Splash!” events for advanced high-school students.
- Content included information economics, analytical statistics, abstract algebra, philosophy of mind, and Play-Doh.