






ARNAV SOOD

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EMPLOYMENT HISTORY

Predoctoral Researcher, University of British Columbia Advisor: Prof. Jesse Perla	Jun. 2018 — Jun. 2020
Lead Developer, QuantEcon References: Prof. John Stachurski, Dr. Matt McKay, Dr. Chase Coleman	Jan. 2019 — Present
Student Researcher, NSF-CUNY Treespace REU	Fall 2016
Research Assistant, Prof. Laura Veldkamp	May. 2016 — Jan. 2018

EDUCATION

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

PUBLICATIONS

Exploiting Symmetry in High-Dimensional Dynamic Programming (with Jesse Perla, Mahdi Kahou, Jesús Fernández-Villaverde)	In-Progress
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We provide a new method for solving high-dimensional dynamic programming problems, and recursive competitive equilibria with a very large (but finite) number of heterogenous agents. The “curse of dimensionality” is avoided due to three complementary techniques: (1) exploiting symmetry in the approximate law of motion and the value function when designing deep learning approximations; (2) constructing a concentration of measure to calculate high-dimensional expectations using only a *single* Monte-Carlo draw for all idiosyncratic shocks; and (3) sampling methods to ensure the model fits along manifolds of interest.

RESEARCH ASSISTANT PUBLICATIONS

Equilibrium Technology Diffusion, Trade, and Growth <ul style="list-style-type: none">Co-wrote Julia code which solves a forward-looking differential system in steady-state, and computes transition dynamics in response to shocks.	Jesse Perla
Knowledge Diffusion Simulations <ul style="list-style-type: none">Wrote Julia code to solve ensembles of high-dimensional jump diffusion problems and track evolution of moments.	Jesse Perla
A Model of Product Awareness and Industry Life Cycles <ul style="list-style-type: none">Provided general assistance with Julia code.	Jesse Perla
Limited Liability as a Financial Friction	Jesse Perla

- Worked on numerical solution of the equilibrium path in Julia, and getting the software ready for publication.

Taking Orders and Taking Notes:

Dealer Information Sharing in Financial Markets

Laura Veldkamp

- Calculated equilibria and bounds for various model cases.

Long-Run Growth of Financial Technology

Laura Veldkamp

- Calculated various limiting facts about the economy.

Germes, Social Networks, and Growth

Laura Veldkamp

- Implemented the network's endogenous transition process in Julia, with caching of relevant state variables.

SOFTWARE

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

Dependency-Aware Jupyter Notebooks

JuliaCon 2020

Extending Distributions with Expectations.jl

JuliaCon 2020

TEACHING

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.