Advanced Python for Economists

A short course for the US-ITC

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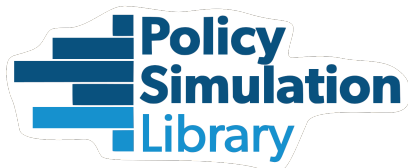
Who am I?

- Jason DeBacker, Associate Professor of Economics at the Darla Moore School of Business at the University of South Carolina
  - → Vice President of Research, Open Research Group
  - → President, PSL Foundation
  - → Leadership Council Member, Policy Simulation Library

- Research: Public finance and macroeconomics - mostly tax

Policy Simulation Library

- The Policy Simulation Library: PSLmodels.org
- An online catalog of open source models and related tools for policy analysis
- Goal: promote transparency and reproducibility in the analysis of public policy by promoting open source models and methods

This Course

- Numerical optimization
- Dynamic programming, with HPC applications:
    - $\rightarrow$ Just in time compilation
    - $\rightarrow$ Compute on GPUs
    - $\rightarrow$ Multiprocessing
- Tools for big data
- Parameter processing and validation
- Code review

Daily Schedule

- **Block 1**: 9:00am-noon, with 15 min break
- **Lunch**: noon-1:30pm
- **Block 2**: 1:30-4:30pm, with 15 min break
- **Office hour**: 4:30-5:30pm
- Also happy to accommodate changes as needed!

Why Python?

- From pure compute, not the fastest language!
- **BUT**: total time = programming time + compute time
  - $\rightarrow$ Python relatively easy language to learn
  - $\rightarrow$ Many tools to increase performance
- Also:
  - $\rightarrow$ Very commonly used language = lots of resources
  - $\rightarrow$ Foundation of most machine learning/AI tools