JIARUI (JERRY) QIAN

Contact Info
arr3ra@virginia.edu
+1 (434)8823425

Institution
Department of Economics, University of Virginia
Year: 3th

Committee Members

John Pepper	jvp3m@virginia.edu
Sandip Sukhtankar	srs8yk@virginia.edu
Anton Korinek	akorinek@virginia.edu

Courses Taken

At UVA

ECON 5090 Mathematical Economics I	ECON 8180 Industrial Organization II
ECON 7010 Microeconomic Theory I	ECON 8190 Economics of Underdeveloped Areas
ECON 7020 Macroeconomic Theory I	ECON 8310 Public Economics I
ECON 7030 Microeconomic Theory II	ECON 8350 Advanced Macroeconomic Theory
ECON 7040 Macroeconomic Theory II	ECON 8360 The Economics of AI
ECON 7710 Econometrics I	ECON 8510 Topics in Growth Theory
ECON 7720 Econometrics II	ECON 8559 Numerical Methods for Economic Analysis
ECON 8010 Microeconomic Theory III	ECON 8720 Time Series Econometrics
ECON 8170 Industrial Organization I	

Online

BREAD-IGC Virtual PhD Course on Firms and Development, Spring 2023
Economics of Ideas, Science, and Innovation Online PhD Short Course organized by Institute for Progress (IFP), Spring 2024
Workshop on Entrepreneurial Finance and Innovation (WEFI), Spring 2024 Fall 2024

Research Interests

Innovation, the Economics of Science, Development Economics, Entrepreneurship

Work in Progress

Title: "When AI Steps into the Lab: How AlphaFold Impacts Scientific Discovery in Structural Biology"
Abstract: This paper studies the impact of Artificial Intelligence (AI) technology on the production of scientific knowledge from human labs under the context of AlphaFold's revolution in structural biology. AlphaFold, developed by Google DeepMind and awarded the 2024 Nobel Prize in Chemistry, can predict the three-dimensional (3D) structures of proteins with comparable accuracy to experiments, but at a much lower cost. Using AlphaFold's confidence score for each protein's prediction to define my treatment, I evaluate the impact of AlphaFold's database release on the quantity and quality of experimental projects aiming at solving proteins' structure, based on a Difference-in-Differences (DID) framework. My main findings include: (1) A substantial substitution effect: the count of completed experimental projects targeting well-predicted structures by AlphaFold decreases by 66.2% to 90.2% relative to pre-release levels. (2) A quantity-quality tradeoff: AlphaFold's good predictions assist structural biologists in

achieving more accurately solved structures. (3) A shift of the evaluation standard in the science community: AlphaFold's broad coverage may shift the credit in academia towards refining existing structures rather than solving experimentally unsolved protein structures, which would potentially alleviate the negative effects from innovation races. Furthermore, AlphaFold also seems to incentivize divergence in the selection of experimental methods across projects.
Award: The Snavely Prize for Best Summer Paper (UVA)

Pre-Doc Research Experience

2020-2021: Research Assistant for Shaoda Wang and David Y. Yang in the project:
"Policy Experimentation in China: The Political Economy of Policy Learning"
(*Forthcoming, Journal of Political Economy)*