Northwestern | Kellogg

Dear NBER Innovation Research Boot Camp Selection Committee,

I am writing to apply to the Innovation Research Boot Camp. I am a PhD candidate in Managerial Economics and Strategy at the Kellogg School of Management, Northwestern University. My primary field is Industrial Organization, with a focus on innovation. I entered the PhD program in 2023 and expect to complete my degree in 2028.

My research agenda examines how firm strategies and institutional design shape technology adoption and diffusion. I am particularly interested in how innovation outcomes interact with market structure and strategic behavior. I believe the Innovation Research Boot Camp would be an excellent opportunity to receive feedback on my work and to engage with scholars working on closely related questions.

One letter of recommendation in support of my application will be provided by Professor Vivek Bhattacharya.

Please feel free to contact me at ruofei.guo@kellogg.northwestern.edu if you need any additional information.

Thank you very much for your consideration.

Sincerely,

Ruofei Guo

J.L. Kellogg School of Management at Northwestern University
2211 Campus Drive, Evanston, Illinois 60208 | 847.491.3300 | kellogg.northwestern.edu

Ruofei Guo

ruofei.guo@kellogg.northwestern.edu

Education

2023–2028 (anticipated) Northwestern University, Evanston, IL, Ph.D. candidate in Managerial Economics and Strategy
- primary field: Industrial Organization
- secondary field: Innovation, Microeconomic Theory

2019–2023 Peking University, Beijing, China, B.A. in Economics
Honor: Leo KoGuan Scholarship - awarded to top 1 student each major

2022 Harvard University, Cambridge, MA, Visiting Undergraduate Student

Research

Publications

"Automatic Enrollment with a 12 Percent Default Contribution Rate" with John Beshears, David Laibson, Brigitte Madrian, and James Choi. *Journal of Pension Economics and Finance* 24.1: 152-182, 2025.

Working Papers

"Support or Suppression? Acquisitions and Diffusion of Knowledge in Patents" with Sungjin Kim

Works in Progress

"Algorithmic Pricing, Asymmetric Adoption, and Market Entry"

"Multitasking Incentives and Performance Manipulation in Executive Compensation" with Luciano Fabio Venturim, and George Georgiadis

"Optimal Waste of Consumer Time: Time-Based Dynamic Promotion Design"

Professional Experience

2023 Deloitte Consulting, Prague, Czech Republic, Research Analyst
- M&A Index forecasting

2021–2022 Inter-American Development Bank, Washington, DC, Research Assistant
- Institutional Designs for Financing Innovation

2021–2022 United Nations ESCAP, Bangkok, Thailand, Research Consultant
- Growth Framework for Small Island Developing States

Teaching Experience

Kellogg School of Management

2025 Tutor, PhD course, Microeconomics (ECON 410-3)

2024; 2025 TA, MBA course, Competitive Strategy and Industrial Structure (MECN 441)

Peking University

2023 TA, undergraduate course, Microeconomics

2021 TA, undergraduate course, Frontiers in International Development

Harvard University

2022 TA, summer school course, The Economics of Emerging Markets

Skills

Languages: English (fluent), French (conversational), Chinese (native)
Software: Python, R, Stata, MATLAB, Julia

PhD Courses

Ruofei Guo - Northwestern University

*All PhD coursework listed below has been completed; no current coursework.

Core Sequences

- Microeconomics: ECON 410-1/2/3
- Econometrics: ECON 480-1/2/3
- Optimization in Economics: MECS 560-1 (Static), MECS 560-2 (Dynamic)

Field Sequences

- Economic Theory and Methods: ECON 412-1/2/3
- Economics of Information: ECON 414-1/2/3
- Industrial Organization: ECON 450-1/2/3
- Technology and Innovation Economics: MECS 549-1

Topics and Electives

- Economics of Organizations I: MECS 570-1
- Mechanism Design: COMP_SCI 432-0
- Data-Driven Theory: KPHD 525-0

Research Workshops / Seminars

- Workshop on Research Development: KPHD 520-0
- Research in Economics: MECS 560-3

Research Statement

Ruofei Guo - Northwestern University

Current Research. My current research studies how mergers and acquisitions by incumbent firms shape the diffusion of technology encoded in patents. In joint work with a coauthor, we develop a framework that predicts, at the level of individual M&A deals, when acquisitions are likely to facilitate versus strategically suppress diffusion, which allows us to evaluate the welfare consequences of restricting diffusion-inhibiting deals. Focusing on IT-related industries, where patents are central to disclosure and M&A is a primary mechanism through which established firms gain control over emerging technologies, our model highlights a core tension: while integration can accelerate downstream use, it can also reallocate control over diffusion in ways that discourage downstream use when technologies threaten incumbents' existing portfolios. We test the theoretical implications using linked SDC Platinum and PatentsView data, showing that diffusion declines disproportionately for acquired patents that pose greater competitive threats. We then develop an identification strategy to estimate the structural model by matching predicted citation paths and deal values to observed outcomes, which allows us to separate low-diffusion patents that are driven by limited economic value from those restrained by strategic incentives, and to quantify counterfactual outcomes under policies that restrict acquisitions that are likely to inhibit knowledge spillovers.

Ongoing and Future Work. More broadly, my research agenda studies how firm strategies and institutional design shape technology adoption and diffusion. In related work, I am developing a project on algorithmic pricing in online marketplaces that examines how heterogeneity in firm quality drives endogenous decisions over whether to adopt pricing technologies and which type to adopt (undercutting versus cycling algorithms), and how these choices in turn affect competition, entry, and welfare. A central theoretical insight of this project is a trade-off between price competition and market access: while cycling algorithms tend to sustain higher prices on average, they may also encourage entry by lowering the technological intensity of competition. Using high-frequency data from Amazon, I study how sellers' adoption of pricing technologies responds to firm competitiveness and strategic interactions, and I evaluate the counterfacstual welfare implications of policies that restrict certain types of algorithms or expand access by providing standardized pricing tools. Together, these projects share a common theme: how access to and control over technology, together with market and policy design, shape whether innovations are broadly diffused or strategically constrained, with implications for market structure and welfare.

Why This Boot Camp. This boot camp is a natural fit for my research, which studies the economic forces shaping how technologies move from initial discovery to widespread adoption. I would particularly value feedback on how to better connect the micro-level mechanisms I study to broader innovation and growth outcomes. The opportunity to attend the NBER Summer Institute Innovation Policy meeting would be especially valuable for situating my work within the broader innovation policy literature. I am also drawn to the program's emphasis on comprehensive lectures that integrate foundational ideas with frontier research, which would help me refine the conceptual framing of my projects and develop a more cohesive research agenda in the economics of innovation. In this regard, I am especially interested in learning from scholars such as Pierre Azoulay, whose work on the institutional and incentive design of scientific research has strongly influenced how I think about innovation policy. Finally, I look forward to engaging with a cohort of peers working on innovation-related questions across fields, and to building connections that can foster sustained academic exchange and collaboration.

February 12, 2026

Dear Colleagues:

I am writing to strongly recommend **Ruofei (Irene) Guo** for the NBER Innovation Research Boot Camp. Irene is a third year PhD student in the Managerial Economics and Strategy program at Kellogg, and she is interested in innovation and digital economics. I met her when she took my graduate IO course as a second year, and she performed excellently. Since that class, I continued to talk to her a few times a month about her work, advised her third-year paper, and joined her committee. I find Irene to be motivated by real-world problems and interested in engaging in both empirics and the technical details of theory. I am optimistic about her path as a researcher.

Irene is working on two main projects now. The first is about how mergers affect the diffusion of innovation. Acquisitions could increase use of an innovation by a downstream firm beyond what would happen in a world where this firm must license a patent. On the other hand, the acquirer could have an incentive to stymie the diffusion of this innovation to rivals. Irene and her coauthor have some descriptive evidence on the effect of mergers on patent citations, and they are currently working on both digging into these results more carefully (and trying to match patents to products) and rationalizing these results through a model. Conversations about this paper have convinced me that Irene is a creative applied theorist: she identifies nontrivial but reasonable economic forces (e.g., how competition might interact with the propensity to see acquisitions that might stymie innovation) and tries to both interrogate them thoroughly through the model and to think carefully about the connection to the facts. She isn't just satisfied with the "first" model that comes to mind—an issue I see with many empirical students—nor is she just in her own world writing extensions to existing models.

The second project relates to pricing algorithms. Irene points out that the literature has treated pricing algorithms as monolithic while in reality there are different classes of algorithms, each of which uses a different set of rules-of-thumb. Irene has a proposed way to recover the class of algorithms used by sellers in an online marketplace, and she is interested in the diffusion of these algorithms and the introduction of new types of algorithms. I find this to be a promising topic at the intersection of digital economics and innovation (although a unique type of innovation—that of firm strategy), although given the early stage I cannot say much more.

Irene is sharp and diligent. She has a tendency to think a bit outside the box, which I am trying to encourage. I would like to see her engage a little bit more with the "messiness"

of data: she is careful with data analysis conditional on the metrics itself, but thinking harder about whether the variables measure what she wants to measure (especially in settings as messy as patents or algorithms) would take her research to the next level. She is early in the program and highly motivated, so I am confident that this is a skill she will pick up soon. The bootcamp will certainly help her with this, and I strongly encourage you to admit her. Her creative thinking, real-world orientation, and technical background will surely be an excellent addition to the group as well!
Please contact me if I can provide any additional information.

Best,
Vivek Bhattacharya
Associate Professor of Economics
Northwestern University