Dear Members of the Selection Committee,

My name is Filipe Fiedler, and I am a fourth-year PhD student in Economics at the University of California, Los Angeles. I have been enrolled in the program since Fall 2022 and expect to complete my PhD in Spring 2028. My primary fields are spatial economics, macroeconomics, and labor economics, and my main advisor is Professor Lee Ohanian.

Course of study and training

I have completed the PhD core sequence in microeconomics, macroeconomics, and econometrics, as well as field courses in macroeconomics, international trade and spatial economics, and labor economics. In addition, I have taken an econometrics course on high-dimensional statistics, with a focus on how machine learning methods can aid identification. I have also pursued independent study in machine learning and AI methods, especially deep learning and AI engineering, following textbooks such as *Dive into Deep Learning* (Zhang et al., 2022) and *AI Engineering* (Huyen, 2024).

Research interests and current projects

My research focuses on how policy and institutional frictions shape the allocation of people and economic activity across space, and on how modern computational methods can be used to study these questions.

My main project studies the consequences of large, temporary suspensions of zoning regulations for residential location choices, housing markets, and welfare. I am developing a structural spatial equilibrium model to quantify how easing zoning constraints affects the reallocation of households across cities and neighborhoods, and to evaluate the distributional consequences of these changes. Empirically, I plan to estimate the model using the implementation of the "builder's remedy" in California in 2022 as a quasi-experimental setting, combining administrative permitting data with microdata on residents and housing markets.

In a coauthored project, I examine how Brazil's economic growth and literacy outcomes might have evolved under earlier democratization. We build a quantitative macro-development model and estimate it using the simulated method of moments, relying on neural networks as flexible function approximators within the SMM framework. This allows us to map structural parameters to model moments in a computationally efficient way, illustrating how machine learning tools can expand the feasible complexity of quantitative macro and counterfactual policy analysis.

AI and digital tools in teaching and applications to economics

I am also actively exploring AI applications in teaching and in the broader diffusion of economic knowledge. I have developed an AI tutor that augments commercial large language models with course materials—lecture notes, problem sets, and textbook excerpts—to create a chatbot tailored to the instructor's content and pedagogical goals. I plan to evaluate the impact of this tool on student learning outcomes using a randomized controlled trial in an undergraduate econometrics course at UCLA, comparing grade distributions and engagement patterns among students with access to the augmented chatbot compared to a control group that only has access to commercial chatbots.

These projects reflect my broader interest in how digital technologies and AI methods can be integrated into economic research, both on the methodological side (e.g., neural networks in structural estimation)

and on the application side (e.g., platforms for instruction, policy simulation tools).

Fit with the tutorial

Attending the NBER Digital Economics and AI Tutorial would be particularly valuable for me at this stage of my PhD. I hope to:

- deepen my understanding of how state-of-the-art AI models are applied in empirical and structural economic research;
- learn best practices for integrating modern AI tools with economic theory and identification strategies;
- broaden my knowledge of digital economics, including platform markets, data-driven business models, and their policy implications.

I would be very grateful for the opportunity to participate in the tutorial and the associated NBER meetings, and to learn from and interact with researchers working at the frontier of these topics.

Sincerely,

Filipe Fiedler
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