Name: Derek Scolnick
Email: derekscolnick@gmail.com
Recommendation: Fabiana Visentin

Dear Members of the Selection Committee,

I am writing to apply for the NBER Innovation Research Boot Camp. I am currently a PhD candidate in the economics of innovation at UNU-MERIT, where my doctoral research is conducted in collaboration with the World Intellectual Property Organization (WIPO).

I have completed the full sequence of doctoral coursework during the first year of my program and have since transitioned to full-time research, in line with the European PhD structure. European doctoral programs require a master's degree and concentrate core PhD coursework into a single year, after which students focus exclusively on research. As a result, I am currently at a stage comparable to PhD students who have completed their 2 years of coursework in US programs.

In addition to my formal doctoral training, I have participated in additional courses and summer schools, which have helped me refine my technical skills and gain exposure to current research in innovation economics. This background has prepared me to engage productively with the NBER Boot Camp and to contribute meaningfully to discussions with faculty and peers.

I am particularly interested in the NBER Innovation Research Boot Camp as an opportunity to further develop my research agenda and benefit from feedback in an intellectually demanding environment. I believe that my training, research focus, and current stage in the PhD make me well suited for the program.

Thank you very much for your consideration. I look forward to the opportunity to participate.

Sincerely,
Derek Scolnick

Derek Scolnick derekscolnick@gmail.com

Education

PhD Economics of Innovation – UNU-MERIT, Netherlands SEP 2024 – PRESENT

- **Topic:** The role of technological change in the production of science and technological knowledge
- **Courses:** Economics of technology and innovation, socio-economic development, policy evaluation, poverty & inequality

Master of Public Policy and Human Development – UNU-MERIT, Netherlands (8.4/10 GPA = 4.0 US) JUN 2024

- **Specialization:** Governance of Innovation
- **Thesis:** Mapping global AI governance using social network analysis and natural language processing

Bachelor of Science, Computer Science – The University of Queensland, Australia(6.3/7 GPA=4.0 US) DEC 2021

- **Focus:** Artificial Intelligence and Mathematics

Summer Schools and Other Courses

KID Summer School on AI, Innovation, and Economics of Science JUL 2025

- Empirical and theoretical work studying how Artificial Intelligence fosters scientific research and innovation

SEEDs Economics Summer School on Patent Data Analysis JUN 2025

- Practical course on studying the economics of innovation with patent data including technological classification codes, citations, name disambiguation, geo-localisation, legal events, and text analysis.

Economic Fitness and Complexity Summer School JUL 2024

- **Methodological tools:** economic fitness and complexity algorithm, measures of relatedness, and network inference using random graphs and multilayer networks.

Practical Deep Learning for Coders – Fast.ai MAR 2023 - AUG 2023

- **Machine learning techniques:** Natural language processing, random forests, building a deep learning model from scratch, and more.

Experience

Startup Founder JAN 2019 - AUG 2023

Lean Systems: Data science business for improving manufacturing operations

Tusk Toothpowder: Sustainable oral care business

Hiri Coral: Project for sustainable development of food systems in Papua New Guinea through coral gardening

iLab Startup Accelerator: Finishing with a 3-minute pitch to an audience of 500 people

Awards

- Won UQ Ventures Validate pitch competition - $3000 (Lean Systems)
- Won Transformer Launch Pad pitch competition - $3000 (Tusk Toothpowder)
- Won World's Challenge Challenge at Bond University pitch competition - $3000 (Hiri Coral)

PhD courses

- Economics of Innovation and New Technologies
- Economics and Strategy of Innovation
- Socio-economic development
- Policy Evaluation
- Inequality and Social Protection

Summer schools

- KID Summer School on AI, Innovation, and Economics of Science
- Economic fitness and complexity summer school
- SEEDS Economics Summer School on Patent Data Analysis

Currently following Kevin Bryan's RSM3091 economics of innovation course syllabus

I am a PhD student in the economics of innovation at UNU-MERIT, with research focused on how new technologies shape the production of knowledge and innovation. My work studies how technological change in methods of invention affect research activity, innovation capabilities, and economic growth.

My current research examines how artificial intelligence is changing the direction of scientific research. I study AI as a method of invention that can generate streetlight effects, concentrating research effort in a narrower set of directions, and floodlight effects, expanding the range of problems that can be addressed. To measure these effects I identify papers that use AI methods and extract the research question that the paper answers. I find evidence for both patterns based on the correlation between intensity of AI methods in a topic and the variance in the research questions, with substantial heterogeneity across scientific subfields. For example, in areas such as protein design and discovery, AI appears to expand the feasible research frontier, consistent with recent breakthroughs in the field. To better understand these differences, I distinguish between AI used as a research tool and the development of AI technology. Using a large language model to classify scientific work along this dimension helps explain conflicting novelty outcomes from science-wide empirical analyses and case-based evidence from specific tools such as AlphaFold. By analyzing how AI reshapes the allocation of scientific effort and the nature of knowledge produced, this work contributes to a deeper economic understanding of how technological change influences innovation trajectories.

Building on this work, my future research aims to study methods of invention more generally, beyond AI, to understand how new technologies reshape innovation capabilities and directions over time. I plan to contextualize AI by identifying other historically impactful methods of knowledge production and examining how their effects on innovation evolve, including transitions between streetlight and floodlight dynamics. I hypothesize that new methods are initially used to improve answers to existing research questions, while over time they enable qualitatively new forms of inquiry – analogous to electricity transforming the factory floor. This research will investigate the conditions under which new methods generate heterogeneous effects, such as differences in maturity, accessibility, or complementarities with existing capabilities. By developing generalizable insights into how new technologies affect the rate and direction of innovation, my work aims to inform science policy, funding priorities, and our understanding of long-run economic growth.

I would like to attend the NBER Innovation Research Boot Camp because it directly supports the next stage of my research. As my work expands from studying AI as a method of invention to a broader analysis of how different technologies shape the direction of innovation, the boot camp offers an ideal setting to refine my theoretical framing, empirical approach, and positioning within the economics of innovation literature. Learning from leading scholars and engaging with peers working on related topics would be particularly valuable in shaping my dissertation and future research.

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Maastricht, 12 February 2026

Dear members of the selection committee,

It is with great pleasure that I am writing to recommend Derek Scolnick for the NBER Innovation Research Boot Camp 2026. I met Derek when he joined our master's program at UNU-MERIT, Maastricht University. I was impressed by his excellent academic performance and the sharpness of his classroom interventions. When he decided to enroll in our PhD program, I was delighted to become his supervisor. It is a great pleasure to work with him and think with him as a supervisor and colleague. Derek has successfully completed all the required courses of our program and obtained approval for his thesis proposal last summer. In fact, in our PhD program, each student is asked to present a detailed project thesis plan at the end of the first year to a commission of three internal experts in the candidate's area of interest. In Derek's case, this happened last June. As a result, he is now working on the first chapter of his thesis.

As Derek's PhD supervisor, I have the privilege of observing his growth as an independent researcher. Derek joined UNU-MERIT with a background in Computer Science and a specialization in Artificial Intelligence and Mathematics, and I was impressed by his speed in catching up and mastering the economics concepts. Derek is a fast learner and a brilliant thinker! He comes well prepared for every meeting, with not just what he promises to deliver, but also new and novel ideas. He is able to combine a deeply thoughtful, reflective analysis of quantitative data with the ability to build a full story from the analysis.

In addition to his manifold academic skills, Derek possesses a range of other valuable skills. As an example, he is a valuable colleague on a project supported by the World Intellectual Property Organization (WIPO), which sponsors his PhD scholarship. So far, Derek has shown excellent (professional) intercultural communication skills and has developed a trustworthy relationship with the project's counterparts.

I strongly appreciate your research boot camp initiative, which some of my students and co-authors have already had the great honour of attending (like Eliana Diodati last year). When I received the call, I immediately encouraged Derek to apply. Derek is interested in examining how artificial intelligence is changing the direction of scientific research, and I am convinced the weeklong program will benefit Derek by consolidating his expertise in the innovation field, engaging him with the innovation research community, and exploring frontier questions with the most highly reputable experts in the field.

` Please do not hesitate to contact me if you need any additional information.

Sincerely, Fabiana Visentin

