

Shreyas Gadgin Matha

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EXPERIENCE

Growth Lab, Harvard Kennedy School

Senior Computational Social Scientist

Sep 2018 – Present

Promoted from Research Fellow in March 2023. Director: Ricardo Hausmann.

– **AI Systems and Software**

- [Ask Atlas](#) – built and deployed as sole developer. LangGraph ReAct agent over the Atlas of Economic Complexity with entity resolution, RAG for technical documentation, grounded SQL spot-checked against an internal API, and citation links back into Atlas visualizations. Detailed evals and CI/CD pipeline with feedback and observability.
- Growth Lab Deep Search – agentic RAG system over the Growth Lab research corpus: compute-cluster PDF ingestion, agent performs query decomposition, retrieval, reranking, and citation-grounded synthesis.
- [py-economy](#) – Python implementation of the Hidalgo–Hausmann economic-complexity methodology; 33,000+ PyPI downloads; used by the Atlas of Economic Complexity and by research groups internationally.

– **LLM-based measurement of historical US occupational change**

- Built a longitudinal occupational task-content dataset spanning 1939-2019 US labor history: custom OCR pipeline over historical books; BERT-based models fine-tuned for multi-label classification of O*NET work activities; network-based concordance harmonization.

– **Innovation, technology, and geopolitics research**

- Quantified how geopolitical distance shapes international research and innovation collaboration, especially in critical technologies.
- Showed how links between science, technology, and production predict where countries gain and lose technological specializations; contributed to WIPO's **World Intellectual Property Report 2024** and related work on innovation capabilities; Conducted innovation-related Growth Diagnostics for Japan, UAE, and India.

– **Policy research engagements**

- Led or contributed to applied empirical work for governments and public agencies in India, Colombia, Saudi Arabia, Albania, and the UAE, translating growth diagnostics, economic-complexity analysis, administrative microdata, and geospatial measurement into policy recommendations.
- Conducted growth diagnostics across Meghalaya, Albania, and the Colombian Amazon, using gravity migration models to diagnose economic isolation (Meghalaya), the full universe of buyer-supplier VAT transactions to map production-network capabilities (Albania), and satellite imagery with road-accessibility analysis to connect deforestation patterns to economic opportunity and local governance (Colombian Amazon).

Massachusetts Institute of Technology

Graduate Research Assistant

Jan 2017 – May 2018

Advisor: Jonathan Gruber, Ford Professor of Economics.

- Analyzed county-level effects of discipline-specific public R&D on regional growth and employment; built a panel dataset on US public R&D spending by academic discipline. Work incorporated into Gruber and Johnson, [Jump-Starting America](#) (2019)

Jameel Poverty Action Lab (J-PAL), India

Senior Research Associate

Jul 2014 – Jun 2016

Promoted from Research Associate. PIs: Michael Greenstone, Rohini Pande, Nicholas Ryan, and Anant Sudarshan.

- Contributed to the design of India’s first industrial particulate-matter emissions trading scheme; modeled marginal abatement costs, coordinated field data collection, and built automated analytics over continuous-emissions-monitoring data for regulators; impact evaluation of public disclosure of industrial emissions in Maharashtra, including automated extraction and cleaning of large regulatory emissions datasets.

EDUCATION

Massachusetts Institute of Technology | Cambridge, MA

Sep 2016 – Jun 2018

- S.M., Technology and Policy – Institute for Data, Systems and Society.

Birla Institute of Technology and Science, Pilani (BITS Pilani) | Goa, India

Aug 2010 – Jul 2015

- Dual degree: M.Sc. (Hons.) Economics and B.E. (Hons.) Electronics & Instrumentation Engineering.

SELECTED PUBLICATIONS

- Eight Decades of Changes in Occupational Tasks, Computerization, and the Gender Pay Gap. (2023). *Growth Lab Working Paper* ([link](#)). *Best Paper Award, DRUID 2024* (Lisbon).
- Burning Bridges or Bridging Divides: Science and Innovation Collaboration Across the Geopolitical Divide. (2026). *Revise & Resubmit at Research Policy*
- GLocal: A Global Development Dataset of Subnational Administrative Areas. (2024). *Nature: Scientific Data* ([paper](#)) ([data](#)).
- Global Trends in Innovation Patterns: A Complexity Approach. (2024). *Background paper for the WIPO World Intellectual Property Report 2024*. ([link](#))

TEACHING AND SERVICE

- Instructor, **API-313M: Tools and Methods of Economic Complexity** – Harvard Kennedy School (Spring 2024, Spring 2025).
- Instructor, **Economic Complexity Summer School** – UM6P, Rabat, Morocco (Forthcoming, Jul 2026).
- **Growth Lab AI Reading Group** – Founder and convener (Apr 2025 – Present); ~35 researchers from HKS, MIT, and CEPS; Topics: LLM internals, agents, evaluation, and AI-and-the-economy.
- **Workshops at HKS** on AI-assisted research workflows (Claude Code, agent design) and on research infrastructure (HPC clusters, GitHub workflows, data management), 2019 – Present.

SKILLS

Languages: Python, SQL, R

LLMs: LLM agents (LangGraph, OpenAI / Anthropic SDK); Retrieval-Augmented Generation (RAG); evaluation of agentic systems, fine-tuning LLMs for downstream tasks

Infrastructure: SLURM, GCP, AWS, Docker, FastAPI, Google Earth Engine.