

Sepehr (Alireza) Ilami

ilami.a@northeastern.edu |  My webpage |  LinkedIn |  GitHub |  Google Scholar | Boston, MA

SUMMARY

Ph.D. researcher in Industrial Engineering at Northeastern University working at the intersection of **Multi-agent Systems**, **Network Science**, and **Computational Social Science**. I explore how intelligent entities—either humans or AI agents—coordinate, cooperate, and influence each other in networked environments. I build agent-based simulations that integrate LLMs to study coordination and decision-making in complex social systems. I also study collective human behavior and mobility dynamics. Strong background in computer science and mathematical modeling, with diverse experience spanning **computer vision**, **reinforcement learning**, and **sociotechnical systems**.

SKILLS

- **Programming:** Python; R; SQL; NetLogo C++; Java; $\text{\LaTeX}$; Git
- **Research Skills:** Agent-based modeling; Multi-agent systems; LLM agents; Network analysis; Computational modeling; Statistical analysis; Causal reasoning; Computer vision; Mathematical modeling; Game Theory; Agentic AI, LLM Fine-tuning, Critical thinking; Problem-solving
- **Languages:** Farsi/Persian (native); English (advanced, IELTS 8/9); Spanish (elementary)

EXPERIENCE

- **Northeastern University** Sep 2023 – Present
Doctoral Researcher (Advisor: Prof. Babak Heydari) Boston, MA
 - Designed agent-based simulations that integrate LLM agents with RL in game theory settings to study LLM interactions in networked environments and policy design for sociotechnical systems.
 - Conducted empirical studies on dynamic human mobility networks, human risk) to evaluate impacts on mobility, collective behavior, and downstream public-health outcomes; analyzed emergent coordination patterns.
 - Co-authored *Instigating Cooperation among LLM Agents Using Adaptive Information Modulation*; led experiment design, ablations, and evaluation.
- **UC Berkeley** Jun 2022 – Sep 2022
Undergraduate Researcher (Supervisor: Prof. Niloufar Salehi) Berkeley, CA
 - Analyzed large-scale Twitter datasets using quantitative (statistics/NLP) and qualitative analysis to characterize online harassment patterns and users (both sides) trajectories before/after incidents.
 - Investigated intervention strategies to reduce harmful behavior and improve user experience; synthesized findings into actionable design implications for online communities.
- **École Polytechnique Fédérale de Lausanne (EPFL)** Jun 2021 – Apr 2022
Undergraduate Researcher (Supervisor: Prof. Alexandre Alahi) Lausanne, Switzerland
 - Built a unified framework to harmonize multiple autonomous-vehicle trajectory datasets to improve cross-domain model generalization.
 - Explored trajectory prediction with neural networks, causal inference, and theory-driven approaches; applied computer vision techniques in self-driving contexts.
- **AI-MED** Aug 2020 – Jul 2021
R&D Data Scientist Tehran, Iran
 - Developed deep-learning pipelines for medical imaging, including CT and X-ray analysis for COVID-19 infection detection and lung cancer screening.
 - Implemented data preprocessing and model evaluation workflows to ensure robustness and clinical relevance in applied settings.
- **Teaching (Selected) — Sharif University of Technology** 2020 – 2022
Teaching Assistant Tehran, Iran
 - Scientific & Technical Presentation (Sp'22, Fa'21, Sp'21); Discrete Structures (Sp'22, Sp'21); Artificial Intelligence (Sp'22); Computer Structure and Language (Sp'21); Linear Algebra (Fa'20); Advanced Programming (Sp'20).

EDUCATION

- **Northeastern University** 2023 – 2028 (expected)
Ph.D., Industrial Engineering — CGPA: 3.61/4 — Advisor: Babak Heydari Boston, MA
- **Northeastern University** 2023 – 2025 (expected)
M.Sc., Industrial Engineering — CGPA: 3.61/4 Boston, MA
- **Sharif University of Technology** 2018 – 2023
B.Sc., Computer Engineering — GPA: 3.77/4 Tehran, Iran

PUBLICATIONS

- **S. Ilami**, Q. Cao, B. Heydari. *Network Topology Matters, But Not Always: Mobility Networks in Epidemic Forecasting*. [arXiv](#), 2025.
- Q. Chen, **S. Ilami**, N. Lore, B. Heydari. *Instigating Cooperation among LLM Agents Using Adaptive Information Modulation*. [arXiv](#), 2024.
- N. Lore, **S. Ilami**, B. Heydari. *Large Model Strategic Thinking, Small Model Efficiency: Transferring Theory of Mind in Large Language Models*. [arXiv](#), 2024.
- R.G. Modegh, A. Salimi, **S. Ilami**, A.H. Dehqan, H. Dashti, S.H. Javanmard, H. Ghanaati, H.R. Rabiee. *COVID-19 Diagnosis with Artificial Intelligence*. [Springer Nature](#), 2022.

WORKING PAPERS

- **LLM-Agent Policy Simulator for EV Adoption**
Developed a framework for LLM-based Agent-based Modeling; Studied how various policies shape EV adoption trajectories; Explored policy interventions, societal response, and behavioral feedback loops.
- **Computational Analysis of Collective Human Behavior Patterns During Pandemic Events**
Modeled mobility flows and contact networks to analyze collective behavior and policy impacts during pandemic scenarios.
- **Connected Minds: How Misbelief is Contagious in Social Systems**
Studying how the structure of our social connections shapes individual strategic decision-making

PRESENTATIONS

- **International Conference on Computational Social Science (IC2S2)** [🌐] May 2024
Poster Presentation: Integrating Language Models with Agent-Based Modeling for Policy Analysis University of Pennsylvania, PA
- **International Engineering Systems Conference (CESUN 2025)** [🌐] June 2025
Oral Presentation: Instigating Cooperation among LLM Agents Using Adaptive Information Modulation George Mason Universty, VA

SELECTED COURSES

Sociotechnical Systems (A)	Comp. Urban Science (A-)	Adv Statistical Methods (A)
Deterministic OR (A-)	Res Design for Social Networks (B+)	Artificial Intelligence (20/20)
Game Theory (20/20)	Eng Probability&Stat (20/20)	System Dynamics (19.2/20)

SERVICES — REVIEWER

- **International Conference on Computational Social Science (IC2S2)**[🌐] May 2025

HONORS AND AWARDS

- Travel Grant, PhD Network, Northeastern University (2024, 2025)
- Ranked 101st of 150,000 (top 0.1%), National University Entrance Exam, Iran (2018)
- 1 Silver and 2 Bronze Medals, Iran Teenagers Math Olympiad (2012–2015)

EXTRACURRICULAR ACTIVITIES

- **ICPC (Executive Staff); CSSS (Scientific Staff); WSS (Director); DataDays (Scientific Staff)** 2019–2021
Activities and student initiatives
 - Sports and interests: Table Tennis, Chess, Volleyball; Poetry; Podcasts

REFERENCES

Available upon request.