Negin Maddah

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SUMMARY STATEMENT

Ph.D. researcher in AI and statistics with experience in deep learning, generative models, causal inference, and large-scale behavioral analytics. I design ML pipelines, build forecasting models, and translate complex data into actionable insights across socio-technical, healthcare, and enterprise systems.

EDUCATION

- Ph.D. in Industrial Engineering, Northeastern University, Boston, MA (GPA 3.86). Expected Graduation 12/2026
- Graduate Certificate in Data Analytics Engineering, Northeastern University, Boston, MA. 12/2026
- M.Sc. in Industrial Engineering, K.N.Toosi University of Technology, Tehran, Iran. 01/2020
- B.Sc. in Industrial Engineering, University of Alzahra, Tehran, Iran. 09/2017

SKILLS

- **Programming and Tools:** Python (Pandas, NumPy, scikit-learn, PyTorch/TensorFlow), R, SQL.
- **AI:** GenAI (Transformers/LLMs/RAG), supervised/unsupervised learning, NLP, Reinforcement learning.
- **Statistics:** causal inference (DiD, regression discontinuity, event study, synthetic control).
- **User Behavioral Modeling:** graph/network design, user behavior/interaction modeling.
- **Experimentation and Testing:** Hypothesis testing, multivariate stat, A/B & quasi-experiments, sensitivity analysis.
- **Certifications:** Applied Social Network Analysis in Python (Online: University of Michigan, 2024), Business Analyst with Process Mining (Celonis: Leading Cloud-Platform in Business Intelligence, 2021).
- **Selected Courses:** Machine Learning, Generative AI, Data Mining, Statistical Methods.

EXPERIENCES

Northeastern University – MAGICS Lab (Boston, MA): Graduate Research/Teaching Assistant 01/2022 – Present

- Developed Python pipelines to **estimate platform-wide treatment (LLM tools) effect on 1M-user behavior of social platforms** using time series analysis.
- **Modeled 200k+ user-pair interaction patterns** of digital platforms using Natural Language Processing (NLTk).
- Designed **agent-based simulation and data-driven optimization to quantify intervention opportunity**: yielding a +9% system-level performance across Monte-Carlo scenarios.
- Selected Recognition:
  - **Best Presentation Award**, 2025 CESUN,
  - **PhD Merit Award for Excellence in Research**, College of Engineering, 2024,
  - **Plenary Talk (20/700 submissions selected)**, ~1000 audience in 2024 IC2S2,
  - **Publications:** journal of Reliability Engineering and System Safety (**IF: 12.4**), IEEE-CSS,
- Taught **Economic Decision-Making** to 200+ grad students; topics included NPV/TVOM/IRR, sensitivity/risk analysis.
- **Managed a graduate-level online course design** (College of Engineering): Scripted video modules, co-designed/coordinated animations, and served as on-camera instructor.

Harvard Medical School – Nezami Lab (Boston, MA): AI Researcher 05/2025 – Present

- Led a **data fidelity project**: benchmark of missing-data imputation methods (transformer-based, GAN, diffusion, VAE, random forest) on 13k cases; prediction of downstream outcomes.
- Modeled a hybrid GRU-transformer-based architecture for **time-series forecasting** (1-hour ahead real-time warning): ~95% balanced accuracy
  - **Spotlight Presenter, 2025 MIT-MGB AI-Cures**.

Behfa Consulting (ABPMP); Golrang Industrial Group (Iran): Systems & Processes Analyst 07/2018 – 12/2021

- Designed and documented technical requirements for enterprise software by **interviewing stakeholders and benchmarking systems**.
- Collaborated with developers to **test, validate, and deploy new features**; ensured end-user adoption through iterative feedback cycles.
- Managed **data mining & process mining projects** on ERP logs to identify workflow bottlenecks, assess governance compliance, and recommend business process improvements.
    - **Translating complex analytics into actionable business insights:** developed and delivered data mining workshops (Sharif University of Technology and multiple industry clients).

PUBLICATIONS

- **N. Maddah**, B. Heydari, 2024, Platform-Driven Collaboration Patterns: Structural Evolution Over Time and Scale. *IEEE Transactions on Computational Social Systems.*
- **N. Maddah,** B. Heydari, 2024, Building Back Better: Modeling Decentralized Recovery in Sociotechnical Systems using Strategic Network Dynamics. *Journal of Reliability Engineering and System Safety.*
- **N. Maddah,** E. Roghanian, 2023, Data-Driven Performance Management of Business Units Using Process Mining and DEA. *The International Journal of Productivity and Performance Management.*

SUBMITTED/WORKING PAPERS

- **N. Maddah,** B. Heydari, 2025, The Shifting Dynamics of Online Knowledge Platforms and the Implications for Generative AI Sustainability.
- A. Ramezani, **N. Maddah (Co-first author),** et al., 2025, Beat-AI: BiomEtrics for Atrial Arrhythmia Tracking Using Artificial Intelligence.
- **N. Maddah**, et al., 2025, Generative-AI-Based Imputation to Preserve Data Fidelity and Improve Outcome Prediction.
- **N Maddah,** 2024, As Transparent as Possible, System Implementation Governance Using Business Process Mining.

SERVICE

- **Peer Reviewer**: Humanities and Social Sciences Communications (Nature); Journal of Computing and Information Science in Engineering (ASME); Future Business Journal (Springer); Knowledge and Information Systems (Springer).
- **Conference Review Committee**: International Conference on Computational Social Science (IC2S2 2025); Wiki Workshop (2025 and 2026 Wikimedia Conferences).