Mohammad Mahdi Azarbeik

Researcher

Email | LinkedIn | GitHub | Website | Google Scholar

Education

Ph.D., Computer Science (Informatics) 2023 – Present
Vienna University of Technology (TU Wien) *Vienna, Austria*

M.Sc., Mechanical Engineering 2020 – 2023
Sharif University of Technology (SUT) *Tehran, Iran*

B.Sc., Mechanical Engineering 2016 – 2020
K. N. Toosi University of Technology (KNTU) *Tehran, Iran*

Research Interests

Clinical AI & Decision Support: Reinforcement Learning for Critical Care, Clinical Decision Support Systems, Off-Policy Evaluation
Machine Learning: Deep Reinforcement Learning, Generative AI, LLMs, Self-Supervised Learning
Biomedical Data: Physiological Time Series, Multi-Modal Clinical Data (EHR, Structured, Imaging), ICU Databases
Robotics: State Estimation, Data Fusion, Localization

Skills

Programming: Python, MATLAB, SQL, Linux (Ubuntu)
Clinical Data: MIMIC-IV, ViennaAIdb, ICU time series, physiological signal analysis, EHR feature engineering
Deep Learning & ML: PyTorch, TensorFlow, scikit-learn
Robotics: Sensor & Data Fusion, Kalman Filtering, ROS (Robotic Operating System), Arduino IDE
Developer Tools: Git, Google Cloud Platform, BigQuery, MySQL, PostgreSQL
Misc.: Academic research, scientific writing, interdisciplinary clinical-computational collaboration, teaching

Publications

[1] **M. M. Azarbeik**, L. Kapral, R. Weiss, C. Heitzinger, and O. Kimberger, "Learning and evaluating improved reinforcement learning-based policies for sepsis treatment on mimic-iv," *Journal of Critical Care*, vol. 92, p. 155385, 2026.

[2] L. Kapral, **M. M. Azarbeik**, R. Weiss, R. Bologheanu, C. Heitzinger, and O. Kimberger, "Optimal timing for renal replacement therapy in critically ill patients using reinforcement learning algorithms," *Journal of Critical Care*, vol. 86, p. 154964, 2025.

[3] **M. M. Azarbeik**, H. Razavi, K. Merat, and H. Salarieh, "Augmenting inertial motion capture with SLAM using EKF and SRUKF data fusion algorithms," *Measurement*, vol. 222, p. 113690, 2023.

[4] V. Arzt, **M. M. Azarbeik**, I. Lasy, T. Kerl, and G. Recski, "TU Wien at SemEval-2024 task 6: Unifying model-agnostic and model-aware techniques for hallucination detection," in *Proceedings of the 18th International Workshop on Semantic Evaluation (SemEval-2024)*, pp. 1183–1196, Association for Computational Linguistics, June 2024.

[5] A. Meghdari, S. M. J. Zolanvari, H. Izanlo, M. S. Tohidi Nafe, **M. M. Azarbeik**, and et al., "An overview of the design experience and group analysis of a spinning ride from the perspective of engineering education," *Iranian Journal of Engineering Education*, vol. 24, no. 94, pp. 39–60, 2022.

Experiences

Researcher Jul. 2025 – Present
Medical University of Vienna (MUW) - Department of Anaesthesia *Vienna, Austria*

- Developing and validating deep reinforcement learning agents for decision support in intensive care.
- Applying robust off-policy evaluation methods to assess clinical AI policy performance in offline settings.

- Collaborating with intensive care physicians to ensure clinical plausibility of AI-driven treatment recommendations.

Researcher Feb. 2025 – Apr. 2026

Ludwig Boltzmann Institute Digital Health and Patient Safety (LBI DHPS) *Vienna, Austria*

- Lead researcher on the EU-TRAINS project: "Towards an Ecosystem of user-centric devices and services for multisport training and remote healthcare enabled by an Artificial Intelligence-based network of sensors."

University Assistant Oct. 2023 – Jan. 2025

Vienna University of Technology (TU Wien) *Vienna, Austria*

- Conducted research on offline reinforcement learning for clinical decision support; implemented deep RL pipelines in PyTorch on large-scale ICU databases.
- Designed and benchmarked multi-method off-policy evaluation frameworks for medical RL.
- Evaluated and detected hallucinations in large language models.

Teaching Assistant

- Reinforcement Learning, *Vienna University of Technology (TU Wien)*
- Generative AI, *Vienna University of Technology (TU Wien)*
- Data-oriented Programming Paradigms, *Vienna University of Technology (TU Wien)*
- Numerical Analysis, *K. N. Toosi University of Technology (KNTU)*