Seyed Amir Ahmad Safavi-Naini MD, MBA, MME

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Research Interest —

• Cost-effective (AI) Screening System • Medical (Big) Data Curation • AI-Augmented (Explainable) Medicine

Education

Shahid Beheshti University of Medical Sciences, Iran

2020-2024 Master of Science in Medical Education (GPA: 18.78/20)

• Thesis: Retrieval Augmented LLM-Based Medical Exams Generation (EXAMINER)

2020 Master of Business Administration in Healthcare (200-hour; 12 Courses; GPA: 20/20)

2014-2021 **Medical Doctorate** (GPA: 16.98/20)

• Thesis: Trend of Oropharyngeal and Oral Cavity cancers in Iran from 2003 to 2017: Time Series Analysis of National Cancer Registry Database

Academic and Industry Research Experience

| 2024-now | Digital Transformation Consultant at a private insurance firm (<i>Saman</i>) is developing an automated pipeline based on LLM for organizing data (project contract) |
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| 2024 | Project Consultant for Intelligent Platform (<i>Sakoo</i>) to train, deploy, and maintain AI for healthcare professionals involving the integration of LLM and MLOps (6 months - freelancing) |
| 2023-2025 | Researcher Fellow (remote) at Division of Data-Driven Medicine (D3M), Icahn School of Medicine at Mount Sinai. Projects: Benchmarking LLMs and VLMs in Gastroenterology; Providing Support and Developing Tools for using LLMs for Extraction and RAG-based Solutions |
| 2021-2022 | Research Fellow at Research Institute for Gastroenterology and Liver Diseases, SBMU. Projects: Founded and Lead PanCanAID - Pancreas Cancer Early Detection using CT scan |
| 2020 | R&D Associate working on AI-based alarming system for 15 emergency conditions of brain CT scan (9 months - paid part-time) |
| 2019-2022 | AI-MEIDIC: startup on CXR-based AI for diagnosing of diseases, including COVID-19 |
| 2018-Now | Peer Review : More than 15 invited-reviews for International Journal of Surgery, BMC, Aging, PLOS ONE, Frontiers, and JCLA. Conferences : Distinguished Poster at DDW (USA) 2024, World Congress of Gastroenterology 2022, Best Junior Presenter at USERN 2021, LIMSC 2021, and 2019. Peer-mentoring of 28 (bio)medical students. Bronze medal in the National Olympiad for Medical Science Students (2020). Ranked in the top 1% in the university entrance exam. |

Skills -

Software & Coding

- Python (PyTorch, Langchain, Streamlit, Sickit, FastAPI, Pandas/Numpy, vtk)
- 3D Slicer, QuPath, ITK-SNAP, MONAI, XNAT
- Docker, Unix Scripting, Git Version Control
- R Programming, Excel, Visual Basic, SPSS

Research Skills

• Statistical Modeling and Machine Learning

- Design of Intelligent Augmented Systems
- Data Collection, Validation, and Pipeline
- Project Management and Conflict Resolvement
- Problem Solving and Self-authorship

Other

- Cell Culture, RT-PCR and Animal Modeling
- Mentoring, Curriculum Planning, and Teaching
- English (Proficient)

Selected Publications

Article Type. Authors. Article Title. Journal. Year. DOI/Link. (©: corresponding author, §: first author)

Original Article. T Savage, et al. Large language model uncertainty proxies: discrimination and calibration for medical diagnosis and treatment. Journal of the American Medical Informatics Association. 2025. https://doi.org/10.1093/jamia/ocae254

§ Original Article. SAA Safavi-Naini, et al. Vision-Language and Large Language Model Performance in Gastroenterology: GPT, Claude, Llama, Phi, Mistral, Gemma, and Quantized Models. arXiv. <u>https://doi.org/10.48550/arXiv.2409.00084</u>

© Original Article. M Ghaffarzadeh-Esfahani, et al. Large Language Models versus Classical Machine Learning: Performance in COVID-19 Mortality Prediction Using High-Dimensional Tabular Data. arXiv. 2024. https://doi.org/10.48550/arXiv.2409.02136

§ Original Article. SAA Safavi-Naini, et al. GI-COPILOT: AUGMENTING CHATGPT WITH GUIDELINE-BASED KNOWLEDGE. Gastroenterology. 2024. <u>https://www.gastrojournal.org/issue/S0016-5085(24)X6001-1?pageStart=40</u>

§ Original Article. S.A.A Safavi-Naini, et al. Drivers' behaviour confronting fixed and point-to-point speed enforcement camera: agent-based simulation and translation to crash relative risk change. Nature Scientific Reports. 2024. https://doi.org/10.1038/s41598-024-52265-3

© Original Article. M Raoufi, et al. Comparative analysis of COVID-19 pneumonia in pregnant versus matched nonpregnant women: radiologic, laboratory, and clinical perspectives. Scientific Reports. 2024. https://doi.org/10.1038/s41598-024-73699-9

§Original Article. S. Barough, S.A.A Safavi-Naini, et al. Generalizable machine learning approach for COVID-19 mortality risk prediction using on-admission clinical and laboratory features. Nature Scientific Reports. 2023. https://doi.org/10.1038/s41598-023-28943-z

§ Original Article. F. Siavoshi, S.A.A Safavi-Naini, et al. On-admission and dynamic trend of laboratory profiles as prognostic biomarkers in COVID-19 inpatients. Scientific Reports. 2023. <u>https://doi.org/10.1038/s41598-023-34166-z</u>

§ Original Article. S.A.A Safavi-Naini et al. Excess All-Cause Mortality and COVID-19 Reported Fatality in Iran (April 2013 – September 2021): Age and Sex Disaggregated Time Series Analysis. BMC Research Notes. 2022. https://doi.org/10.1186/s13104-022-06018-y

Original Article. M. Raoufi, S.A.A Safavi-Naini, et al. Correlation Between Chest Computed Tomography Scan Findings and Mortality of COVID-19 Cases; a Cross-Sectional Study. Archives of Academic Emergency Medicine. 2020. https://doi.org/10.22037/aaem.v8i1.719

Refrences

1- Ali Soroush, MD, MS (Mentor and supervisor at D3M): Assistant Professor of Gastroenterology at Division of Data-Driven Decision (D3M) Making at the Icahn School of Medicine at Mount Sinai - <u>Ali.Soroush@mountsinai.org</u>

2- Girish N. Nadkarni, MD, MPH (Chair of D3M): Chair of the Windreich Department of Artificial Intelligence and Human Health and Director of the Hasso Plattner Institute for Digital Health - <u>girish.nadkarni@mountsinai.org</u>

3- Hamid R. Rabiee, Ph.D (Supervisor): Distinguished professor of computer science at Sharif University of Technology - rabiee@gmail.com

4- Mohamad Amin Pourhoseingholi, Ph.D. (Mentor and supervisor at RIGLD): Associate professor of biostatistics at RIGLD and Medical Statistician at NIHR Nottingham Biomedical Research Centre (Hearing) – <u>aminphg@gmail.com</u>