Zahra TehraniNasab

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in zahra-tehraninasab

Education

McGill University	**Montreal, Canada**
M.Sc. Electrical Engineering (Thesis), GPA: 3.93/4	*Aug 2023 – Present*
Sharif University of Technology	**Tehran, Iran**
B.Sc. Computer Science, GPA: 17.64/20	*Sep 2018 – Feb 2023*
National Organization for Development of Exceptional Talents (Sampad)	**Shiraz, Iran**
High School Diploma, GPA: 19.99/20	*Sep 2015 – June 2018*

Honors & Awards

Awarded the Mila EDI Scholarships - Women in AI Category, Valued at CAD$10,000, MILA (Quebec AI Institute), 2024-2025

Awarded the Graduate Excellence Fellowship (GEF), Valued at CAD$4,500, McGill University, 2023

Ranked 229th Among More Than 140,000 (Top 0.17%) Participants, Iranian Nationwide University Entrance Exam, Mathematics and Physics Discipline, 2018

Publications

Language-Guided Trajectory Traversal in Disentangled Stable Diffusion Latent Space for Factorized Medical Image Generation, MIV-CVPR Workshop Proceedings 2025, Zahra TehraniNasab*, Amar Kumar*, Tal Arbel, https://arxiv.org/abs/2503.23623

RL4Med-DDPO: Reinforcement Learning for Controlled Guidance Towards Diverse Medical Image Generation using Vision-Language Foundation Models, Under review, Parham Saremi*, Amar Kumar*, Mohammed Mohammed, Zahra TehraniNasab, Tal Arbel, https://arxiv.org/abs/2503.15784

Towards Reliable Human Pose Forecasting with Uncertainty, IEEE Robotics and Automation Letters, S. Saadatnejad, Z. TehraniNasab*, M. Mirmohammadi*, M. Daghyani*, P. Saremi*, Y. Zoroofchi Benisi*, A. Alimohammadi*, T. Mordan, A. Alahi, https://arxiv.org/abs/2304.06707

Research Experience

Master's Student, McGill University	**Montreal, Canada**
Explainability and Fairness in Medical Image Analysis, Probabilistic Vision Group	*Sep 2023 – Present*
Supervisor: Prof. Tal Arbel	

- Developing fine-tuning methods for Vision Language Foundation Models for generalizability in healthcare.
- Understanding the properties of latent subspaces and controlled traversal in them using language guidance.
- Recently submitted a paper on exploration of latent space of a vision language foundation model - Stable Diffusion - for factorized medical image generation to MIV CVPR workshop.

Research Intern, École polytechnique fédérale de Lausanne (EPFL)	**Remote Internship**
Human Pose Prediction, VITA Lab	*Dec 2021 – Jul 2022*
Supervisors: Dr. Alexandre Alahi and Saeed Saadatnejad	

- **Improved state-of-the-art models for about 2% to 5%** by integrating Predictive Uncertainty Awareness.
- Collaborated with five colleagues on developing and maintaining a general **deep learning library** for Human Pose Prediction using Python and PyTorch.

Research Intern, University of California Irvine (UCI)   **Remote Internship**
Food Computing   *Dec 2021 – Jul 2022*
Supervisors: Prof. Ramesh Jain and Prof. Hamid R. Rabiee

- Joint research project between the the **University of California Irvine (UCI) and the Sharif University of Technology (SUT)**
- Developed and experimented with a hierarchical visual feature extractor to predict ingredients and categories of food from an image.
- Developed and experimented with a Graph-LSTM network to predict food categories from the food recipe graph.

Work Experience

Software Developer, NodeEffect LTD   **Hong Kong SAR (Remote)**
Blockchain Technologies   *Oct 2022 – Aug 2023*

- Lead a software development project on peer-to-peer cryptocurrency exchange.
- Developed an open-source project using Typescript and F# that facilitates project management and maintenance by automating reviewing git commits and file conventions. (link)
- Contributed to open-source libraries including: FSharpLint (link), commitlint (link), lnp2pBot (link), fsx (link)

Projects

Persian Spell Correction

Sharif University, Graduate Course Project   *June 2022 - July 2022*

- Designed and implemented a **transformer-based model** to find and **correct spelling errors** in Persian text.

Posepred

École polytechnique fédérale de Lausanne (EPFL), Remote Internship   *Dec 2021 - Jul 2022*

- Developed a library that **integrates state-of-the-art pose prediction models**, which facilitates the development and comparison of models.
- I have contributed to this team project in an internship at VITA lab EPFL.

Teaching Assistant

Applied Machine Learning, McGill University   *Jan 2025 – April 2025*
Fundamentals of Machine Learning, McGill University   *Aug 2024 – Dec 2024*
Artificial Intelligence, Sharif University of Technology   *Feb 2021 – Jul 2022, Sep 2022 – Dec 2022*
Computer Systems, Sharif University of Technology   *Sep 2021 - Dec 2021*
Networking, Sharif University of Technology   *Feb 2021 – Jul 2021, Feb 2022 – Jul 2022*

Skills

Programming languages: Python | Typescript | F# | Java | Matlab | Octave
Operating systems and developer tools: Linux | Windows | Git | GitHub | Tmux
Deep Learning skills and tools: Vision-Language Foundation Models (VLMs), Large Language Models (LLMs), Generative Modeling, Computer Vision, Natural Language Processing, Sequence Modeling, Working with GPU clusters, Working with distributed processing on multiple GPUs and Devices, Pytorch, Pytorch3D, Numpy, Pandas, Sklearn, Matplotlib, HuggingFace, CometML