Omid Ostovari

Graduate Research Assistant in AI Engineering

School of Electrical and Computer Engineering , University of Tehran, Tehran, Iran

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EDUCATION

M.Sc. in Artificial Intelligence and Robotics	Sep. 2022 - Present
 School of Electrical and Computer Engineering, University of Tehran Thesis: Enhancing Neuron Extraction and Spike Inference in Calcium Imagi Supervisor: Dr. Abdol-Hossein Vahabi GPA: 3.65/4.0 (Last two semesters: 4.0/4.0) 	Tehran, Iran ng Using Deep Self-Supervised Denoising
• Relevant coursework: Cognitive Science $(4.0/4.0)$, Deep Neural Networks	(4.0/4.0), Machine Learning $(4.0/4.0)$
 B.Sc. in Computer Engineering Department of Computer Engineering, Yazd University Thesis: Decision Support System for Stock Trading Supervisor: Prof. Vali Derhami 	Feb. 2016 - Jun. 2021 Yazd, Iran
RESEARCH INTEREST	
Computational Neuroscience Neural Activity Decoding	• Neuroimaging
RESEARCH EXPERIENCE	
 Research Assistant Centre for Convergent Technologies Research, University of Tehran Reduced memory usage by 97% (35GB to 1GB) and optimized data access us Applied generative models to denoise calcium imaging data, improving neuron enhanced model training with PyTorch Lightning 	Aug. 2022 - Aug.2025 (Expected) Tehran, Iran sing PyTorch. an extraction and spike inference, and
 Research Assistant Laboratory of Systems Biology and Bioinformatics (LBB), University of Tehran Contributed to weekly lab meetings, reviewing research progress and providin Proposed strategies to improve the generalizability, scalability, and performant 	Sep. 2023 - Sep.2024 Tehran, Iran g feedback on ongoing projects ace of neural networks across datasets
ACADEMIC EXPERIENCE	
Head Teaching Assistant – Graduate Artificial Intelligence Course College of Interdisciplinary Science and Technology, University of Tehran	e Spring 2025 Tehran, Iran
Executive Committee Member - Generative Models in Computer 1st International Conference on Artificial Intelligence, University of Shahid Behesh	Vision WorkshopFeb. 2025etiTehran, Iran
Educational Program Lead – Data Science Summer School Department of Education, Hamrah Academy	Summer 2023 Tehran, Iran
Teaching Assistant - Internet Engineering Course Department of Computer Engineering, Yazd University	Fall 2020 Yazd, Iran
Python Lecturer – Advanced Python Course Students Scientific Chapter of Computer Engineering Department, Yazd University	Fall 2019Yazd, Iran
Python Lecturer - Intermediate Python Course Students Scientific Chapter of Physics Department, Yazd University	Spring 2019 Yazd, Iran
PROFESSIONAL EXPERIENCE	
Software Engineer	Mar. 2021 - Oct. 2021

Software Engineer	Mar. 2021 - Oct. 2021
Hoko, Pishgaman Innovation Accelerator	Yazd, Iran
Chief Executive Officer	Nov. 2020 - Sep. 2021
Aghazgaran Sabz Rayka Isatis, Yazd Science and Technology Park (YSTP)	Yazd, Iran
Full-Stack Developer	Jan. 2019 - Dec. 2020
Aghazgaran Sabz Rayka Isatis, Yazd Science and Technology Park (YSTP)	Yazd, Iran

Brain Dynamics Workshop Instructor: <u>Saman Abbaspoor</u> , Harvard Brain Science Initiative, Harvard University	Mar. 2025 Massachusetts, USA
Optogenetics & Chemogenetics Workshop Instructor: <u>Oveis Hosseinzadeh Sahafi</u> , University of Tokyo	Aug. 2024 Tokyo, Japan
Calcium Imaging Workshop Instructor: Oveis Hosseinzadeh Sahafi, University of Tokyo	Jun. 2024 Tokyo, Japan
Spatio-temporal Modeling in Neuroscience through Machine Learning Instructor: <u>Dr. Reza Abbasi-Asl</u> , University of California, San Francisco (UCSF)	Dec. 2023 California, USA
ACADEMIC PROJECTS	
 EEG Preprocessing & Data Analysis for ERP & Spectral Features EEGLAB Processed EEG data with filtering, artifact removal, and re-referencing for signal enhancement Analyzed ERP and spectral features to examine neural responses to visual stimuli 	Jun. 2024
 Implemented Machine Learning Models from <u>Barakchian et al. 2022</u> Scikit-learn Developed the Opposing Learning (OL) model to capture contextual effects in reinforcement learning Validated model predictions against behavioral data, refining performance through comparative anal 	Jun 2024 g. ysis.
 Designed Task Paradigms from <u>Barakchian et al. 2022</u> and <u>Suzaki et al. 2016 Papers.</u> Psychological Partial and Complete feedback paradigms to investigate counterfactual learning and decise. Engineered risk preference contagion tasks to analyze social influences on risk-related choices. 	hopy May 2024 sion-making.
 Advanced Generative Adversarial Networks (GANs) for Image Synthesis PyTorch Developed a GAN on the MNIST dataset, incorporating stability enhancements and evaluating gene Conducted a comparative analysis to identify strengths and weaknesses of different GAN variants, or performance and mitigating mode collapse. 	Dec. 2023 rative quality. ptimizing
 Denoising Diffusion Probabilistic Models (DDPM) for High-Fidelity Image Generation PyT Implemented a DDPM on the CIFAR-10 dataset, optimizing image quality using Latent Diffusion terbenchmarking against standard DDPMs. Evaluated model performance with Fréchet Inception Distance (FID) and explored computational schigh-dimensional data. 	<i>borch</i> Dec. 2023 chniques and alability in
 Variational Autoencoders (VAEs) for Efficient Latent Space Learning PyTorch Developed a VAE with an optimized encoder-decoder architecture, leveraging the ELBO objective to reconstruction fidelity and latent space regularization. Implemented the reparameterization trick for stable training, enhancing representation learning and performance. 	Nov. 2023 balance
 Underwater Image Segmentation using UNet and PSPNet PyTorch Implemented and trained UNet and PSPNet (with MobileNetV2 backbone) for underwater object seg SUIM dataset. Analyzed and compared model performance, reporting segmentation accuracy and qualitative results 	Sep. 2023 gmentation using the
 Developed Machine Translation Models Using Fairseq and Transformer Architectures PyTo Implemented encoder-decoder architectures with Fairseq and fine-tuned mBERT on the AFEC paral Evaluated translation models using BLEU scores, optimized multilingual translation, and analyzed t TensorBoard. 	rch May 2023 lel dataset. raining loss with
 Fine-Tuned ParsBERT for Text Classification PyTorch Trained a transformer-based classification model by fine-tuning ParsBERT on the FarsTail dataset we embedding layers. Assessed model performance using accuracy, F1-score, and confusion matrix, refining it for improved 	Apr 2023 with custom
 Developed Sentiment Analysis Models Using Recurrent Neural Networks PyTorch Implemented LSTM and GRU models for sentiment classification using word embeddings (Word2Vec encoding). Analyzed model performance through evaluation metrics and confusion matrix interpretation to enhance the sentiment of th	Mar 2023 c, GloVe, one-hot ance accuracy.

CONFERENCE AND WORKSHOP

Built Sentiment Analysis Models with Naïve Bayes and Logistic Regression | Scikit-learn

- Developed Naïve Bayes and Logistic Regression models using the Snapfood Persian Sentiment dataset, applying TF-IDF and PPMI feature extraction.
- Preprocessed data with tokenization and normalization, and evaluated models using Precision, Recall, and F1-score.

Conducted Graph Analysis Using Gephi Software | Gephi

- Performed comparative analysis of synthetic ER and real-world networks using clustering coefficient, centrality measures, and entropy.
- Visualized degree distribution probability density functions (PDF) to assess network structures graphically.

Developed a Decision Support System for Stock Trading | Python

- Engineered an automated technical analysis package, integrating Iran Stock Exchange data via web scraping and cryptocurrency data via Yahoo Finance API.
- Generated market insights under the supervision of $\underline{\mathrm{Dr.~Vali~Derhami}}.$

AWARDS AND HONORS

Ranked within the top 1%	Apr. 2022
Iranian National University Entrance Exam for Computer Engineering, qualifying for the Master's Program	Iran
Certificate of Appreciation for ICT Programming Challenge	Jul. 2021
Sharif University ICT Programming Challenge	Tehran, Iran
Certificate of Appreciation for Training in Advanced Python Programming	Feb. 2019
Students Scientific Chapter of Computer Engineering Department, Yazd University	<i>Yazd, Iran</i>
Certificate of Appreciation for Training in intermediate Python Programming	Apr. 2018
Students Scientific Chapter of Physics Department, Yazd University	<i>Yazd, Iran</i>
Ranked within the top 2%	Jun. 2015
Iranian National University Entrance Exam, qualifying for the Bachelor's Program	Iran

SKILLS

Programming Languages: Python, Java, MATLAB, C#, C++, MySQL

Python Libraries: PyTorch, PyTorch Lightning, Tensorflow, Scikit-learn, Psychopy, Pandas, Numpy, Django, Selenium Software & Tools: Jupyter Notebook, EEGLAB, Rasa, Git, Docker, MySQL Workbench, Gephi, Trello, Microsoft Project Languages: English (TOEFL - planned), Persian (Native)

REFERENCES

Dr. Abdol-Hossein Vahabi h.va	ahabie@gmail.com
Supervisor, Assistant Professor, Faculty of Psychology and Computer Engineering, University of Tehran	Tehran, Iran
Prof. Ali Masoudi-Nejad <u>ama</u>	asoudin@ut.ac.ir
Professor of Systems Biology and Bioinformatics, University of Tehran	Tehran, Iran
Dr. Hanieh Naderi hanieh	.naderi@ut.ac.ir
Assistant Professor, College of Interdisciplinary Science and Technology, University of Tehran	Tehran, Iran

Feb 2023

Jun 2021

Dec 2022