

BEHRAD SADEGHI

Computer Engineering Undergraduate Student

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github.com/Behradsadeghi

EDUCATION

University of Guilan

Sep 2019 – Feb 2024

B.Sc. in Computer Engineering

Rasht, Iran

- CGPA: 3.69/4.0 (16.29/20)
- GPA of last year: 4.0/4.0 (18.88/20)

RESEARCH EXPERIENCE

Self-Supervised Learning and Cross-Attention for Accurate Nasal Fracture Detection In Progress (Feb 2024 - Present)

- Behrad Sadeghi, Ali Nabipour, Dr. Seyed Abolghasem Mirroshandel
- Co-authored a research article with Dr. Mirroshandel, utilizing Vision Transformer (ViT) and EfficientNet to diagnose nasal fractures on an original dataset. We achieved over 85% accuracy using transfer learning and enhanced performance by implementing cross-attention for paired image features and self-supervised learning with SimCLR. Currently, we are conducting comprehensive evaluations of various transformer architectures to document performance metrics rigorously.

RESEARCH INTEREST

- Machine Learning
- Computer Vision
- Bioinformatics
- Medical Imaging
- Deep Learning
- Graph Neural Networks
- Large Language Models (LLMs)
- Human-Computer Interaction (HCI)

SELECTED PROJECTS

Transaction Fraud Detection Using GNNs and Tabular Models | [GitHub](#) Pytorch/GNNs/Transformers

- Developed a comprehensive **fraud detection** system using supervised (**Tabular Transformers, Neural Networks**) and semi-supervised (**Graph Attention Networks, GraphSAGE**) learning models. Conducted **EDA**, feature engineering, and implemented **hybrid loss** for graph-based models with **15% labeled data**, achieving competitive performance. Utilized Python, PyTorch, and data visualization to analyze imbalanced transaction datasets effectively.

Pothole Segmentation | [GitHub](#) Pytorch/Yolo

- This project develops an advanced deep learning model, **YOLOv9**, for **detecting** and **segmenting** potholes in **images** and **video streams**. Using a custom dataset, the model was fine-tuned with optimized hyperparameters, achieving a **mAP50** of **0.807** and a **Mask mAP50** of **0.825**, highlighting its effectiveness.

Amazon Reviews | [GitHub](#) Keras/LLM

- A machine learning model was trained on Amazon Reviews for **sentiment analysis**, with preprocessing steps including **tokenization**, stopword removal, **lemmatization**, and **stemming**. Logistic Regression was used, and the repository includes code for additional models like **BERT** and Simple Neural Networks.

AlzMRI-Net | [GitHub](#) Pytorch

- The AlzMRI-Net project develops a deep learning model to classify MRI scans into **four Alzheimer's disease stages** using a fine-tuned **EfficientNet-V2-L** model with **transfer learning** in PyTorch. Techniques like mixed precision training and gradient accumulation improve performance. The model achieves a **99.19%** test accuracy, underscoring its effectiveness in **Alzheimer's disease classification**.

Paper Summarizer | [GitHub](#) Pytorch/LLM



- Automated tool for fetching and **summarizing** the latest research papers from **PubMed** and **arXiv** using the **BART** large language model. Users can easily select papers and view detailed summaries, making it easier to stay updated with current research.

WORK EXPERIENCE (Unpaid)

Machine Learning Engineer Intern

Feb 2023 – August 2023

Infinite Modern Technology

- Gained proficiency in data processing techniques and tools such as Pandas, Matplotlib, Seaborn, and NumPy. Acquired knowledge in machine learning concepts and algorithms, both supervised and unsupervised. Completed several projects including:
- Predicting-Loan-Acceptance — 
- Predictive-Modeling-of-Car-Prices — 

Research Assistant

Nov 2023 – Present

University of Guilan

- I have worked on various datasets and papers under the supervision of Dr. Mirrooshandel.
- Currently, I am focused on a paper titled **Nasal Fracture Diagnosis with Transfer Learning**, which involves a dataset collected by Dr. Mirrooshandel himself that has not been previously explored in this field.

HONORS AND AWARDS

National undergraduate full scholarships, University of Guilan

2019 – 2023

Top 1% of 164,000 participants in the Iranian University Entrance Exam

Announced as the Outstanding Student, University of Guilan

2019 – 2024

Achieving a 4.0 GPA in 4 out of 9 semesters.

Member of the Scientific Association of Computer Engineering in University of Guilan

2023 – 2024

This Association consists of 6 members selected from all the students of the Computer Department

RELEVANT COURSEWORKS

- Data Analysis with Python - FreeCodeCamp
- Deep Learning - HamrahAcademy
- Graph Neural Networks - HamrahAcademy
- Git - Faradars
- Natural language processing: 20/20
- Engineering Probability and statics: 19.75/20
- Advance Programming: 20/20
- Algorithm Design: 19.12/20

TEACHING ASSISTANT EXPERIENCE

Artificial Intelligence | *University of Guilan*

Fall 2022

- **Instructor:** Dr. Y. Boreshban
- As a Teaching Assistant, I was responsible for creating assignments, guiding students through projects, and producing informative videos about neural networks, all to foster optimal learning experiences and facilitate students' comprehension.

Algorithm Design | *University of Guilan*

Spring 2023

- **Instructor:** Dr. A. Khozaei
- I designed and assessed assignments for students so they were able to implement complex algorithms.

Software Testing | *University of Guilan*

Spring 2023

- **Instructor:** Dr. F. Feyzi
- My only responsibility was to assess the students' assignments.

SKILLS

Programming Languages: Python, SQL, Java, C++,HTML

ML Frameworks: PyTorch, TensorFlow, Huggingface, Keras, Scikit-learn

Data Science Tools: PySpark, Metabase, Power BI, Numpy, Pandas, Matplotlib, Seaborn, Scipy, Excel

Extra Tools and Technologies: CI/CD, SonarQube, Git, Git Lab, Docker, Latex

Operating Systems : Linux, MacOS, Windows

Technical Expertise : Machine Learning, **Deep Learning**, GNNs, LLMs, **Computer Vision**, Medical imaging

LANGUAGES

English: Overall band score **7.0** in the IELTS test : Reading(8.5), Listening (7.5), Speaking(6.5), Writing (6)

Persian: Native Language

REFERENCES

Dr. Seyed Abolghasem Mirroshandel

Rasht,Iran

- Associate Professor of Computer Engineering at University of Guilan
- ✉ mirroshandel@guilan.ac.ir
- Google scholar

Dr. Farid Feyzi

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