Soroush Jaberi

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Website: https://soroushjaberi.github.io/ **GitHub:** https://github.com/SoroushJaberi

Education

B.Sc. Computer Engineering (Software Engineering)

Overall GPA: 3.74 / 4
GPA of last 2 years: 3.81 / 4
Karaj Islamic Azad University, 2019-2023

- Selected Courses: A^{++}
  Artificial Intelligence (expert system) = 20 out of 20
  Data Mining = 20 out of 20
  Algorithm design = 20 out of 20
  Computer Graphics = 19.5 out of 20
  Software Engineering = 19.25 out of 20

M.Sc. Student in Artificial Intelligence

Overall GPA: 4 / 4
Karaj Islamic Azad University, 2023-present

- Selected Courses: A^{++}
  Machine Learning = 20 out of 20
  Image Processing = 19.5 out of 20

Selected Projects

- Lung-Tumor-Segmentation-Using-PyTorch-Deep Learning
- Liver-Tumor-Segmentation-Using-PyTorch-DeepLearning
- Langchain_LLM_Retrieval_QA: A retrieval-based QA system using Langchain and large language models to process and answer questions from documents
- Comprehensive NLP - Sentiment Analysis Algorithms
- Persian-sentiment-analysis-using-FastText-Model-NLP
- Live Bicep Counter - computer vision
- GUI application for image processing
- PDF-Similarity-Comparison
- Movie-Recommendation-And-Analysis
- Quiz Game for Children: Python
- Board Games: Python
- online website with some features (A demo of an online shopping website): Python, HTML, CSS
- Hirst painting: Python
- Detecting Motion (using OpenCV)
- Playing the Audio/Text to Speech (Using pyttsx3)
- webcam motion detector
- web scraper of property data
- interactive web graph
- database web application to collect data

- desktop graphical program that interacts with a database (Python and SQL)
- Implementation of Computer networks with Cisco routers and switches in packet tracer

Research Experience

- ***Authors: Soroush Jaberi, Zeinab Alimardani, Amineh Amini***

  Title: Enhancing Sentiment Analysis in NLP with Ensemble Methodologies: Integrating BERT and VADER*.*

  Status: In preparation [Target Journal: Expert Systems with Applications]

Brief Description: This paper advances the domain of Natural Language Processing (NLP) sentiment analysis by exploring the incorporation of ensemble methodologies. We propose a novel approach by combining the deep learning model BERT with the lexicon-based model VADER, harnessing their complementary strengths to improve precision and reliability in sentiment interpretation. The study demonstrates how integrating context understanding from BERT with the sentiment lexicon of VADER can lead to more robust sentiment analysis frameworks.

- ***Authors: Soroush Jaberi, Amineh Amini***

  Title: A Systematic Mapping Study on Deep Learning-Based Biomedical Image Segmentation Techniques**.**

  Status: In preparation [Target Journal: Artificial Intelligence Review]

Brief Description: This systematic mapping study analyzes a decade of research advancements in deep learning for biomedical image segmentation. It scrutinizes the widespread adoption of these techniques across various imaging modalities and the implementation of different network architectures. The paper evaluates the efficacy of supervised, semi-supervised, and unsupervised learning approaches in clinical applications and dissects the methods used to gauge segmentation accuracy. In highlighting trends and identifying gaps such as the need for more robust 3D network models and standardized evaluation protocols, this work provides a comprehensive synopsis that sets the stage for future innovations in medical imaging analysis.

Research Interest

- Artificial Intelligence and Machine Learning: Advancing AI through innovative applications in deep learning, natural language processing, and intelligent systems.
- Large Language Models and Generative AI: Leveraging their potential to develop cutting-edge applications, including retrieval-based QA systems and sentiment analysis frameworks.
- Deep Learning Applications: Focusing on areas such as biomedical imaging, computer vision, and hybrid approaches for NLP tasks.
- Information Retrieval: Designing embedding-based systems for efficient data access and enhanced decision-making in large-scale environments.

- AI-Driven Software Engineering: Building robust, scalable software systems by integrating AI techniques for automation and enhanced functionality.
- Data Science and Analytics: Applying predictive modeling and data mining techniques to solve real-world problems while prioritizing ethical considerations.
- Cloud Computing and IoT: Exploring secure and scalable infrastructures for AI applications in smart environments and connected systems.

Technical Skills

Programming Languages: Python, Java, JavaScript, C#, HTML, CSS, SQL

Machine Learning & Deep Learning: PyTorch, TensorFlow, scikit-learn, NumPy, pandas, OpenCV, NLTK, LightGBM, XGBoost, instructor-llm

Generative AI and LLMs: Proficient in developing applications using large language models and generative AI frameworks

Development Tools: JetBrains, PyCharm, Anaconda, Jupyter Notebook, VirtualBox, VMware

Database & Information Retrieval: Experience with Chroma vector databases and embedding-based systems for scalable retrieval applications

Other Tools: Matplotlib, Minitab, Microsoft Office, GitHub

Operating Systems: Windows, Linux

Work Experience

Tehran Telecommunication Company (Internship) – 2022-2023

Achievements:

- Monitoring network traffic & data.
- Analyzing and Documenting network connectivity data.
- Conducting few research on cloud computing and computer networking optimization.

Teaching Assistant, Karaj Islamic Azad University (2022-2023)

- ***Data Mining:***
    - Collaborated with Dr. Amini to enhance the learning experience for students by actively participating in the design and evaluation of course assignments focused on data mining concepts and applications.
- ***Algorithm Design:***
    - Assisted Dr. Saboohi in developing and accessing assignments that challenge students to design efficient algorithms, with an emphasis on applications in artificial intelligence***.***

Language Skills

English (pre-advanced) Persian (Native)

References

- **Dr. Amineh Amini**
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  Personal Website: https://www.aminehamini.com/
  Google Scholar: https://scholar.google.com/citations?user=bFoUxcoAAAAJ

- **Dr. Hadi Saboohi**
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