

Saeed Rafieyan

CONTACT INFORMATION

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RESEARCH ASPIRATION

My research goal is to use programming and advanced technology to improve medicine, particularly by applying Artificial Intelligence (AI) in bioinformatics, genomics, tissue engineering, and medical image processing. I also aim to integrate Natural Language Processing (NLP) and large language models to improve communication among healthcare professionals and extract insights from medical data. This interdisciplinary approach aims to pioneer innovations that streamline medical processes and enhance patient outcomes in the evolving healthcare landscape.

EDUCATION

2018 - 2022

MASTER OF SCIENCE IN CHEMICAL ENGINEERING – BIOMEDICAL ENGINEERING

TARBIAT MODARES UNIVERSITY

M.Sc. Thesis: Predicting cell behavior on cardiac tissue engineering scaffolds using machine learning algorithms

Supervisor: Dr. Ebrahim Vasheghani-Farahani

GPA: 16.86/20

M.Sc. Thesis Grade: 19.15/20

2013 - 2017

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING – PROCESS DESIGN

TAFRESH UNIVERSITY

B.Sc. Thesis: Simulation of the biodiesel production process with Aspen HYSYS

Supervisor: Dr. Ahmad Bayat

GPA: 15.14/20

B.Sc. Thesis Grade: 20/20

RESEARCH INTEREST

- Data Science
- Machine Learning
- Modeling and Simulation
- Bioinformatics
- Tissue Engineering
- Protein Design using AI
- Drug Discovery using AI

PUBLICATIONS

- **Rafieyan, S.**, Vasheghani-Farahani, E., Baheiraei, N., & Keshavarz, H. (2023). MLATE: Machine learning for predicting cell behavior on cardiac tissue engineering scaffolds. *Computers in Biology and Medicine*, 158, 106804. 2023;158:106804. <https://doi.org/10.1016/j.compbimed.2023.106804>
- **Rafieyan S**, Ansari E, Vasheghani-Farahani E “A Practical Machine Learning Approach for Predicting the Quality of 3D (Bio)Printed Scaffolds”. Submitted on Biofabrication.
- Fan, J., Abedi-Dorcheh, K., Sadat Vaziri, A., Kazemi-Aghdam, F., **Rafieyan, S.**, Sohrabinejad, M., ... & Jahed, V. (2022). A review of recent advances in natural polymer-based scaffolds for musculoskeletal tissue engineering. *Polymers*, 14(10), 2097. <https://doi.org/10.3390/polym14102097>
- **Rafieyan, S.**, Boojari, M. A., Setayeshnia, A., Fakhroleslam, M., Sánchez-Ramírez, E., Bay, M. S., ... & Segovia-Hernández, J. G. (2024). Acetone-Butanol-Ethanol Fermentation Products Recovery: Challenges and Opportunities. *Chemical Engineering Research and Design*. <https://doi.org/10.1016/j.cherd.2024.04.021>
- **Rafieyan, S.**, & Bayat, A. (2020, April). Process Simulation of Biodiesel Production from Soybean Oil with Aspen HYSYS: A Comparative Study of two different processes. In *Proceedings of the 11th International Chemical Engineering Congress & Exhibition*, Fouman, Iran (pp. 15-17). [Link](#)
- **Rafieyan S** “Classification of chest X-ray images using the Swin Transformer algorithm (in Persian),” presented at the 13th National Conference on Applied Research in Electrical and Computer Sciences and Medical Engineering (2022)
- **Rafieyan S** “Morphological classification of sperm using the Swin Transformer algorithm (in Persian),” presented at the 13th National Conference of Applied Research in Electrical and Computer Sciences and Medical Engineering (2022)
- **Rafieyan S** “Predicting the death probability of myocardial infarction patients based on their clinical data using machine learning algorithms (in Persian)” presented at the 17th National Conference on New Researches in Computer Science and Engineering (2022)

SKILLS

Computer Skills and Engineering Software:

- Python
- Pandas
- NumPy
- PyTorch
- Supervised and Unsupervised Machine Learning Algorithms
- scikit-learn
- Deep Learning
- Linux
- Visualization libraries such as Matplotlib, Plotly, etc.
- Database development
- Docker
- Git
- Design Expert
- Adobe Photoshop

Lab Skills:

- decellularization protocols
- hydrogel preparation
- animal cell culture
- scaffolds fabrication

LICENSES AND CERTIFICATES

- | | | |
|---|----------|------------------------|
| • Neural Networks and Deep Learning | Coursera | [Link] |
| • Data Visualization using Plotly | Coursera | [Link] |
| • Deep Learning with PyTorch: Image Segmentation | Coursera | [Link] |
| • Deep Learning with PyTorch: Object Localization | Coursera | [Link] |
| • Introduction to Genomic Technologies | Coursera | [Link] |
| • Python for Genomic Data Science | Coursera | [Link] |

CURRENT PROJECTS

- Actively contributing to the development of a domain-based large language model (LLM) using natural language processing (NLP) in the field of tissue engineering under the supervision of Prof. Ebrahim Vasheghani-Farahani.
- Collaborating with a team from Brno University of Technology on MLATE V3, the first multi-tissue predictive ML tool for 3D printed tissue engineering scaffolds under the supervision of Prof. Ebrahim Vasheghani-Farahani and Prof. Valentine Provazník.
- Developing software for algorithmically designing 3D-printed scaffolds using optimization algorithms under the supervision of Prof. Ebrahim Vasheghani-Farahani.

LANGUAGES

English

- TOEFL (IBT) candidate
- Duolingo: 110

Persian: Native

WORKING EXPERIENCE

Jan 2023 – Present
HiWEB

Data Scientist

As a member of the AI department, I actively contribute to the development of innovative technologies aimed at addressing complex business challenges beyond human capabilities. During my time in the AI department, I have undertaken several projects, including customer segmentation, customer churn prediction, predicting the timing of customers'

Jan 2021 - Jul 2021 (7 months)
YecomSoft

next purchases, and customer next package price prediction. These initiatives have allowed me to leverage advanced analytical techniques and data-driven insights to drive strategic decision-making and optimize business outcomes.

Data Scientist

I had a great job working on a project where we aimed to create a Text-to-Speech (TTS) system using Artificial Intelligence (AI). The goal was to make audiobooks quickly, sounding as human-like as possible, just from the book text. It was especially challenging because we did it in Persian. My main role was in natural language processing (NLP), and Dr. Hamidreza Keshavarz was my manager and mentor. I learned a lot from this experience.

Aug 2020 - Oct 2020 (3 months)
MAPSA

Django Web Developer Intern

This internship was my first time working on the back end using the Django framework. We built an online store and blog. I learned about strategies for developing the back end of an online store, and I gained experience with GIT, Django & DjangoREST, Databases, agile methodology, teamwork, and more.

HONORS & AWARDS

- Recipient of the Shahid Sayyad Shirazi Award from the Iranian National Elite Foundation.
- Awarded a full national graduate scholarship for pursuing studies in the Department of Chemical Engineering at Tarbiat Modares University.
- Achieved a top 2% ranking among over 10,000 participants in the nationwide graduate university entrance exam for a Master's degree in chemical engineering.
- Granted a governmental Tuition-Waiver scholarship for undergraduate studies in the School of Chemical Engineering at Tafresh University.

VOLUNTEER WORK

- Member of Iran Biomaterial and Tissue Engineering Society
- Member of the Iran Chemical Engineering Society
- Member of Tarbiat Modares University Chemical Engineering Association
- Member of Tafresh University Chemical Engineering Association
- Member of Tafresh University Robotic Association
- Founder of the Great Mind Research & Innovation Group, Tafresh University
- Main member of the Student Union Council of Tafresh University

- Founder and Secretary of the Center for History and Culture, Tafresh University
- Founder of the Red Crescent and Charity Center, Tafresh University
- Managing Director and Editor of NimNegah Magazine, Tafresh University
- Secretary of Poetry and Literature Center, Tafresh University

REFERENCES

Prof. Ebrahim Vasheghani-Farahani

Professor, Department of Biomedical Engineering, Tarbiat Modares University

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Dr. Ahmad Bayat

Assistant Professor, Department of Chemical Engineering, Tafresh University

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Dr. Mohammad Fakhroleslam

Assistant Professor, Department of Chemical Engineering, Tarbiat Modares University

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Dr. Hamidreza Keshavarz (Mohammadian)

Lecturer at University of Tehran, Ph.D. in Computer Engineering, AI researcher

Email: keshavarz.h@modares.ac.ir

[google scholar](#)