

Saeed Rafieyan

Also listed as Saeed Rafieyan Boroujeni

PhD researcher, Digital Manufacturing of Biomimetic Systems group, Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw

Raf.Biomed@gmail.com · rafieyan.xyz · ORCID 0000-0002-3018-3683

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EDUCATION

- | | |
|----------------|---|
| 2026 – present | ■ PhD
<i>Institute of Physical Chemistry, Polish Academy of Sciences (IChF PAN) · Warsaw, Poland</i>
Thesis: <i>Inverse design-assisted biodegradable modular dressings for negative pressure wound healing</i> <ul style="list-style-type: none">• Digital Manufacturing of Biomimetic Systems group. |
| 2018 – 2022 | □ MSc in Chemical Engineering – Biomedical Engineering
<i>Tarbiat Modares University · Tehran, Iran</i>
Thesis: <i>Predicting cell behavior on cardiac tissue engineering scaffolds using machine learning algorithms</i> <ul style="list-style-type: none">• GPA: 3.78 / 4 |
| 2013 – 2017 | □ BSc in Chemical Engineering
<i>Tafresh University · Tafresh, Iran</i>
Thesis: <i>Simulation of the biodiesel production process with Aspen HYSYS</i> |

RESEARCH EXPERIENCE

- | | |
|----------------|---|
| 2025 – present | ■ Research assistant – data scientist
<i>Jiangnan University, Dr. Madadi's group · Wuxi, China</i> <ul style="list-style-type: none">• Machine-learning and deep-learning models for biofuel production and process optimisation, resulting in peer-reviewed publications. |
| 2023 – 2025 | □ Research assistant – data scientist
<i>Tarbiat Modares University, Dr. Fakhroleslam's group · Tehran, Iran</i> <ul style="list-style-type: none">• Machine-learning and deep-learning models for distillation and separation processes; chemical-engineering text mining. |

- 2019 – 2025 □ **Research assistant – data scientist**
Tarbiat Modares University, Prof. Vasheghani-Farahani's group ·
Tehran, Iran
- Developed and led AI-driven research projects, including MLATE (three versions, web app at mlate.ir) and TissueGPT, a language model fine-tuned on tissue-engineering literature.
- 2022 – 2024 □ **Data scientist**
Men's Health & Reproductive Health Research Centre, Shohadaye Tajrish Hospital · Tehran, Iran
- Multimodal deep learning for semen analysis and drug-effectiveness prediction from clinical data and imaging.

INDUSTRY EXPERIENCE

- 2023 – 2025 □ **Data scientist**
HiWEB · Tehran, Iran
- Churn, next-purchase and purchase-value models for marketing; ASR and LLM-based quality control for Persian call-centre audio; dashboards in Flask and Plotly Dash.
- 2021 □ **Data scientist**
YecomSoft · Tehran, Iran
- Persian NLP and text-to-speech for audiobook production.
- 2020 □ **Django web developer (intern)**
MAPSA · Tehran, Iran
- Backend and REST APIs for an online retail platform.

PUBLICATIONS

- [9] **Bioprinting-Enabled Customization of Biohybrid Actuators: Scaling Dimensions and Functional Complexity**
Pajouhande M, Celikkin N, **Rafieyan S**, et al.
Gels · 2026 · doi:10.3390/gels12100923
- [8] **MLATE V3: An Open-Source Multi-Tissue AI Framework for Data-Driven Optimization of 3D-Printed and Bioprinted Scaffolds**
Rafieyan S, Partovi Nasr M, Ansari E, Kheradvar Kolour A, Banimohamad-Shotorbani B, Vasheghani-Farahani E
Biofabrication · 2026 · doi:10.1088/1758-5090/aeb162 IN PRESS

- [7] **Data-driven insights for enhanced cellulose conversion to 5-hydroxymethylfurfural using machine learning**
Qiao Y, Kargaran E, Ji H, Madadi M, **Rafieyan S**, Liu D
Bioresource Technology · 2025 · doi:10.1016/j.biortech.2025.132582
- [6] **A practical machine learning approach for predicting the quality of 3D (bio)printed scaffolds**
Rafieyan S, Ansari E, Vasheghani-Farahani E
Biofabrication · 2024 · doi:10.1088/1758-5090/ad6374
- [5] **Acetone-butanol-ethanol fermentation products recovery: Challenges and opportunities**
Rafieyan S, Boojari MA, Setayeshnia A, et al.
Chemical Engineering Research and Design · 2024 · doi:10.1016/j.cherd.2024.04.021
- [4] **MLATE: Machine learning for predicting cell behavior on cardiac tissue engineering scaffolds**
Rafieyan S, Vasheghani-Farahani E, Baheiraei N, Keshavarz H
Computers in Biology and Medicine · 2023 · doi:10.1016/j.combiomed.2023.106804
- [3] **A Review of Recent Advances in Natural Polymer-Based Scaffolds for Musculoskeletal Tissue Engineering**
Fan J, Abedi-Dorcheh K, Sadat Vaziri A, Kazemi-Aghdam F, **Rafieyan S**, et al.
Polymers · 2022 · doi:10.3390/polym14102097
- [2] **Predicting cell behavior on cardiac tissue engineering scaffolds using machine learning algorithms**
Rafieyan S
MSc thesis, Tarbiat Modares University, Tehran · 2022
- [1] **Process Simulation of Biodiesel Production from Soybean Oil with Aspen HYSYS: A Comparative Study of two different processes**
Rafieyan S, Bayat A
11th International Chemical Engineering Congress & Exhibition (IChEC 2020), Fouman, Iran
· 2020

SOFTWARE AND DATA

MLATE – Machine Learning Applications in Tissue Engineering: publicly available models and data that predict how a scaffold will print and how cells will respond to it, rank candidate formulations, and suggest what to fabricate next.

TissueGPT (doi:10.57967/hf/8917) – A BioGPT language model fine-tuned on tissue-engineering literature, for summarising papers, generating domain text and supporting scientific writing.

ECM Program Atlas – A reproducible, Matrisome-based framework for mapping extracellular-matrix gene programs across human tissues, validated on external transcriptomic and protein-level data, to support ECM-informed biomaterial design.

SERVICE

Peer reviewer for IOP Publishing journals (IOP Trusted Reviewer), including Physics in Medicine and Biology, Biomedical Materials, Biomedical Physics & Engineering Express, Engineering Research Express and Progress in Biomedical Engineering; also Results in Surfaces and Interfaces (Elsevier).

SKILLS

Machine learning

Regression, classification, clustering, feature engineering, model selection, Bayesian optimisation, gradient boosting (XGBoost, LightGBM, CatBoost), scikit-learn

Deep learning and NLP

PyTorch, TensorFlow, Hugging Face Transformers, CNNs, RNNs, multimodal learning, LLM fine-tuning, text mining, topic modelling

Software and data

Python, NumPy, pandas, Matplotlib, Plotly, Dash, Streamlit, Flask, FastAPI, Docker, GitHub Actions, PostgreSQL, MySQL, SQLite

Laboratory

Cell culture, MTT assay, decellularisation, hydrogel preparation, scaffold fabrication, 3D printing, freeze-drying

LANGUAGES

English · TOEFL iBT 90/120

Persian · Native

ADDITIONAL TRAINING

Neural Networks and Deep Learning · Coursera · 2020

Deep Learning with PyTorch: Image Segmentation · Coursera · 2022

Deep Learning with PyTorch: Object Localization · Coursera · 2022

Data Visualization using Plotly · Coursera · 2022

Introduction to Genomic Technologies · Coursera · 2022

Python for Genomic Data Science · Coursera · 2022

REFERENCES

Available on request.