Amirhosein Shirzad Gavabari

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Education

Tarbiat Modares University **Tehran, Iran**

M.S. in Biochemical Engineering Sep 2022- Jul 2025

- Supervisors: Mohsen Nosrati, Seyed Morteza Zamir
- Thesis: Simultaneous prediction and optimization of methane production and hydrogen sulfide content in an anaerobic digester based on interpretable artificial neural network
- GPA: 18.99/20 (1.38 in German grading system)

University of Tehran **Tehran, Iran**

B.S. in Chemical Engineering Sep 2018- Sep 2022

- GPA: 15.39/20 (2.38 in German grading system)

Rereash Interest

- Bioprocess Development
- Fermentation
- Data Analysis
- Bioprocess Modeling and Simulation
- Enzyme Production
- Machine Learning

Publications

Submitted papers

1) Shirzad Gavabari, A., Zamir, S. M., Nosrati, M., Interpretable machine learning for simultaneous prediction and multi-objective optimization of methane and hydrogen sulfide in an industrial anaerobic digestion process, Journal of Water Process Engineering. *Manuscript under review.*

Language

- Persian: Native or bilingual proficiency
- English: Full professional proficiency

Working Expreinces

1) Internship, Production Processes Department, Sobhan Daru Co., Jun 2021 - Aug 2021
   Tasks & Accomplishments: Acquired hands-on insight into pharmaceutical production and, quality control processes, including exposure to manufacturing operations, analytical instruments, and GMP-compliant practices
2) R&D Specialist, R&D Department, Bioluence, Feb 2024 - Jul 2024
   Tasks & Accomplishments: Applied a combination of theoretical research and hands-on laboratory skills to enhance enzyme production, involving literature investigation, process data analysis, Design of Experiments (DoE), and the operation of fermenters and Tangential Flow Filtration (TFF) equipment.

Teaching Expreinces

- Teaching assistant, Industrial Microbiology, Tarbiat Modares University, Fall 2023

Projects

1) Exploring new methods for natural gas sweetening, University of Tehran, May 2022 – Jun 2022
2) Feasibility study and investigation of energy recovery from sludge, Mashhad WWTP, Fall 2023
3) Design and tech-economic analysis of oxalic acid bio-production downstream process using SuperPro Designer, University of Tarbiat Modares, In progress

SKILLS

Technical Skills

- **Programming & Data Science**: Proficient in Python for machine learning, deep learning, and data analysis.
- **Process Optimization**: Experienced in applying metaheuristic algorithms and statistical approaches for process improvement.
- **Modeling & Simulation**: Skilled in process modeling and simulation using SuperPro Designer.
- **Statistical Analysis**: Proficient in Design of Experiments (DoE) for process characterization and optimization.

Software Proficiency

- **Specialized Software**: SuperPro Designer, Design Expert, Qualitek-4
- **Development Tools**: Google Colab
- **Office Suite**: MS Office (Advanced Excel, Word)

Laboratory Skills

- **Bioprocessing Equipment**: Hands-on experience with fermenter operation and Tangential Flow Filtration (TFF).
- **Analytical Techniques**: Skilled in using Spectroscopy and High-Performance Liquid Chromatography (HPLC).

Other skills:

- Teaching, Communication, Team work, Problem solving, Innovation, Adaptability

LICENSES AND CERTIFICATES

1) Algae Biotechnology, Coursera, Aug 2022
2) Introduction to Industrial Bioprocess Development, Coursera, Jul 2023
3) Industrial Biotechnology, Coursera, Jun 2023
4) Introduction to HSE, Iranian Association of Chemical Engineering (IAChE), Dec 2020
5) Introduction to Matlab, Tehran University, Aug 2019
6) MS Excel for data analysis, Tehran University, Aug 2019

HONORS AND AWARDS

1) Ranked within the top 5 % among approximately 144,000 participants in the National Entrance Examination for Iranian Universities, Iran
2) Ranked as the 1st student among all students of Biochemical Engineering at the end of the Master's, Tarbiat Modares University, Iran
3) Awarded a competitive research grant by the Iran National Science Foundation (INSF), Project No. 4031210

LEADERSHIP POSITIONS

- Secretary of the Tarbiat Modares Biochemical and Biomedical Engineering Scientific Association, Nov 2023 - Nov 2024

REFRENCES

Dr. Mohsen Nosrati
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Faculty of Chemical Engineering
Tarbiat Modares University
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Dr. Seyed Morteza Zamir
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