ALIREZA MIRALIAKBAR

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EDUCATION

Doctor of Philosophy, Chemical Engineering JAN 2023 - Present
Oklahoma State University
Supervisor: Prof. Zheyu Jiang

Master of Science, Chemical Engineering SEP 2019 - DEC 2022
University of Tehran GPA: **18.09/20** (4/4)
Thesis: Modeling Microfluidic Mixing of Hydrogels using Computational Fluid Dynamics with OpenFOAM
Supervisors: Prof. Rahmat Sotudeh-Gharebagh, Prof. Reza Zarghami

Bachelor of Science, Chemical Engineering SEP 2015 - SEP 2019
University of Tehran GPA:**17.30/20**(3.74/4)
Thesis: Feedback control scheme of a yeast fermentation bioreactor using MATLAB & Simulink by designing and optimizing a fractional-order PID controller
Supervisor: Prof. Hooman Fatoorehchi

EXPERIENCE

- **ACADEMIC EXPERIENCE**

  -Graduate Research Assistant, Oklahoma State University JAN 2023 - Present
  Optimal control of chemical and biochemical processes using reinforcement learning

  -Graduate Research Assistant, Multiphase Systems Research Center
  University of Tehran DEC 2020 - DEC 2022
  Modeling the viscous polymeric hydrogel fluids micro-mixing with OpenFOAM

  -Research Assistant, Iranian National Algae Culture Collection(INACC),
  University of Tehran FEB 2020 - MAY 2020
  Process Design and Simulation of Agar extraction process from Gracilaria macroalgae using SuperPro Designer and Aspen Plus

  -Undergraduate Research Assistant, University of Tehran FEB 2019 - SEP 2019
  Designing a fractional-based PID control system for a bioreactor by simulation, and Optimizing the simulation using MATLAB/Simulink

- **WORK EXPERIENCE**
  - Intellectual Property Department Manager
  Future Biotechnology Pioneers Ltd. JUNE 2020 - NOV 2020
  Co-developed patents of Phycocyanin Extraction and Bioplastic Production and successfully granted them from Iranian Patent Office

- **TEACHING EXPERIENCE**
  Teaching Assistant, University of Tehran

  – Computer-Aided Advanced Process Simulation FALL 2021

  Tutor, Iranian National Algae Culture Collection AUG 2020

  – Workshop: Process Simulation of Biotechnology and Pharmaceutical Processes using Aspen Plus
  Executing workshop of Aspen Plus for the R&D section of INACC laboratory students with focus on simulating the biotech and pharmaceutical processes

RESEARCH INTERESTS

Fuzzy Control Systems, Model Predictive Control (MPC), Process Intensification, Nonlinear Programming and Optimization, Computational Fluid Dynamics, Reinforcement Learning, Machine Learning

HONOURS AND AWARDS

Ranked within the top 10% of Chemical Engineering Department in Process Design Major among more than 35 students with GPA of 18.09/20
University of Tehran MAY 2021

University of Tehran's M.Sc. Fellowship Award as an exceptional talented student and exempt from taking the entrance exam.
University of Tehran SEP 2019

Ranked within the top 10% of class 2019 of undergraduate students in Chemical Engineering Department with GPA of 17.30/20,
University of Tehran SEP 2019

Ranked within the top 0.5% of more than 182,000 participants in Nationwide Iranian Universities Entrance Exam in the field of Mathematics and Physics AUG 2015

PUBLICATIONS

- **Patents**
  - Ajayebi, Nima., Barzad, Mohammad Sadegh, **Miraliakbar, Alireza**, Tavakoli, Omid. 2021.Extraction Process of Phycocyanin from Spirulina sp. with Cell Wall Breakage.Iran Patent Application No.139950140003005382 - filed September 14, 2020, and issued March 14 2021.
  - Daeizadeh, Dorsa, Barzad, Mohammad Sadegh, **Miraliakbar, Alireza**, Tavakoli,Omid. 2021. Bioplastic production process based on Sodium Alginate extracted from Sargassum Sp. algae. Iran Patent Application No. 139950140003006595, filed October 21, 2020, and issued April 19, 2021.

ACADEMIC PROJECTS

Development of Mixing Vessel Design Software using Microsoft Excel VBA for High Viscous Fluids, University of Tehran MAY 2020 - AUG 2020
Mixing Process Course Project

Feedback Fuzzy Fractional PID temperature control of a bioreactor system for bioethanol production, University of Tehran JAN 2020 - MAY 2020
Advanced Control Engineering Course Project

Techno-Economic Assessment of bio-gas production from municipal waste
University of Tehran APR 2019 - JUNE 2019
The Project of Economics and Engineering Design Course

Developing MATLAB code for Multicomponent mixture Dew and Bubble Point calculation, University of Tehran MAR 2018
Voluntarily Done Project for Unit Operations 1 Course

SKILLS

Programming Languages and Softwares
MATLAB, Python, C++, VBA, COMSOL Multiphysics, Aspen HYSYS, Aspen Plus, AutoCAD, SuperPro Designer, OpenFOAM, ANSYS Fluent LaTeX