**Soodabeh Ghaffari**

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| **Current Position** | **Research Specialist** $ΙΙ$**,** Department of Molecular Biology, Zemer Gitai’s group, Princeton UniversityDeveloping New Antibiotics Using Artificial Intelligence Pipelines Aug 2022 – present |
|  **Education****Penn State**, State College, PA, USAGPA:3.65/4.00 | **M.Sc. in Chemical Engineering**  Dec 2021**Advisor**: Costas Maranas**Research**: Computational Protein Engineering**Selected Courses**: Linear Programming, General Transport Phenomena, Algorithms and Data Structure in Bioinformatics, Optimization in Biological Networks, General Biochemistry, Genomics, Applied Bioinformatics, and Data Mining |
|  **Sharif University of Technology**, Tehran, Iran GPA:17.4/20 | **M.Sc. in Chemical Engineering** Jan 2013**Advisor**: Mohammad Shahrokhi**Field of study**: Modeling and Process Control Engineering**Selected Courses**: Advanced Mathematics in Chemical Engineering, Artificial Intelligence Application in Chemical Engineering, Nonlinear Control, and Adaptive Control |
| **Sharif University of Technology**, Tehran, Iran  GPA:16.54/20 | **B.Sc. in Chemical Engineering** Jan 2010**Advisor**: Ramin Bozorgmehry Boozarjomehry |
| **Research** **Experiences** |  * **Research Assistant,** Department of Pharmacology, Penn State March 2022 – May 2022

Designing allosteric communication networks in protein structures using deep learning* **Researcher**, Petrochemical Research & Technology Company, Iran Jan 2013- Jan 2017

Responsibilities included: (a) chemical patent analysis, (b) reactor design and operations, and (c) economic assessment of various chemical methods.* **Internship**, Pars Oil and Gas Company in Iran Jun 2009 - Aug 2009

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| **Honors** | * **Selected Participant**, INTERSECT Research Software EngineeringTrainingBootcamp, supported by the National Science Foundation, Princeton University July 2023
* Recipient of the McWhirter Graduate Program **Fellowship,** Chemical Engineering Department, Penn StateAug 2018- Dec 2018
* **Ranked 40th** out of more than 7,000 candidates in the Iran National Matriculation exam in chemical engineering (M.Sc.), awarded a competitive tuition waiver for the master’s program at Sharif University Feb 2010
* **Ranked among the top 0.2%** of more than 500,000 participants in the Iran National Matriculation Exam, granted a prestigious tuition waiver for undergraduate studies at Sharif University Jun 2005
 |
| **Publications and Conferences** | * Jindra, M. A., Choe, K., Chowdhury, R., Kong, R., **Ghaffari, S.,** Sweedler, J. V., & Pfleger, B. F. (2023).” [Evaluation of strategies to narrow the product chain-length distribution of microbially synthesized free fatty acids.” *Metabolic Engineering*.](https://www.sciencedirect.com/science/article/pii/S1096717623000320?casa_token=pLYZFvSB7gYAAAAA:VPsSbBWaPAKIUgZtx4SR3MXQPyWVYwKg5BB9s2WpggspPlJbij7D4DfrR3WWkRSTOzWerEKTTaz6)
* Jindra, M. A., **Ghaffari, S.**, Chowdhury, R., Maranas, C.D., & Pfleger, B.(2020).” Computational and experimental exploration of the sequence-structure-function relationship of a medium-chain acyl-ACP thioesterase.” Presented at [AICHE 2020, Food, Pharmaceutical & Bioengineering Division](https://aiche.confex.com/aiche/2020/meetingapp.cgi/Search/0?sort=Relevance&size=10&page=1&searchterm=jindra).
* **Ghaffari, S. & Shahrokhi, M.** (2014). “Modeling and Control of an Ethylene Oxide Reactor.” Presented at the 8th International Chemical Engineering Congress and Exhibition (ICHE 2014), Kish Island, Iran, Feb 24-27.
 |
| **Teaching****Experiences** | * **Teaching Assistant** (Dr. Phillip Savage) Aug 2021 – Dec 2021

**Process Safety and Control (CHE 452), Penn State** Responsibilities included: (a) holding office hours to clarify concepts for 130 students and (b) proctoring and grading midterm and final exams.* **Teaching Assistant** (Dr. Mahmoud Reza Pishvaie) Jan 2011- May 2013

**Process Control Laboratory (26-301), Sharif University of Technology** Responsibilities included: (a) preparation of course materials, (b) instruction of three classes, each with 20 undergraduate students, and (c) grading lab reports and exams. |
| **Computer Skills** | **Programming Languages and Frameworks:** Python, Machine Learning (including working with Scikit-learn, PyTorch, TensorFlow) and MATLAB**Optimization:** Mixed-Integer Linear Programming, GAMS**Software Applications:** Schrodinger Software (Maestro, Pymol), Rosetta and AutoDock Vina**Operating Systems and Environments:** Linux and Computing Cluster Environment**Other:** Familiarity with Molecular Dynamics Simulation and Version Control System(Git) |
| **Projects****Undertaken** | **Princeton University*** **Developing New Antibiotics Using Artificial Intelligence Pipelines (status:** ongoing**)**

***Collaborators:*** Dr. Ryan Adams, Dr. Barbara Engelhardt, Computer Science department, Princeton University**Penn State*** **Generation of Chemical Warfare Agent Protective Fabrics** (**status:** experimental validation): Redesign of E. *coli* outer membrane protein F for capturing chemical warfare agent molecules

***Collaborators:*** *Dr. Manish Kumar, Civil, Architectural and Environmental Engineering, the University of Texas at Austin***Sharif University*** **Modeling and Control of an Ethylene Oxide Reactor Using Matlab/Simulink** (master’s thesis)
* **Simulation of a natural gas liquids unit with Aspen HYSYS** (bachelor’s thesis)
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| **Soft Skills** | * Integrity
* Effective Communication
* Teamwork
* Problem-solving
* Willingness to learn and engage in scientific discussions
* Excellent attention to details
* Persistence
 |
| **References** | * Zemer Gitai, Ph.D., Professor of Molecular Biology, Princeton University

zgitai@princeton.edu* Phillip Savage, Ph.D., Professor of Chemical Engineering, Penn State

pes15@psu.edu* Ali Borhan, Ph.D., Professor of Chemical Engineering, Penn State

axb20@psu.edu * Mohammad Shahrokhi, Ph.D., Professor of Chemical Engineering, Sharif University

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