**Soodabeh Ghaffari**

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| **Current Position** | **Research Specialist ,** Department of Molecular Biology, Zemer Gitai’s group, Princeton University  Developing New Antibiotics Using Artificial Intelligence Pipelines Aug 2022 – present |
| **Education**  **Penn State**, State College, PA, USA  GPA: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 |
| **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) |
| **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   [shahrokhi@sharif.edu](mailto:shahrokhi@sharif.edu) |