# Hao Tian

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## EDUCATION

**Southern Methodist University**, Dallas, TX — Aug. 2019 – May 2023
- Ph.D. in Theoretical and Computational Chemistry, GPA: 3.9/4.0
- Research topic: Understand protein allostery through molecular dynamics and artificial intelligence

**Georgia Institute of Technology**, Atlanta, GA — Aug. 2020 – May 2023
- Online M.S. in Computer Science, GPA: 4.0/4.0

**Beijing University of Chemical Technology**, Beijing, China — Aug. 2015 – Jun. 2019
- B.Eng. in Chemical Engineering, GPA: 3.49/4.33

## SKILLS

- **Languages**: Python, Java, HTML, CSS, JavaScript, PHP
- **Toolkits & Frameworks**: Linux, Docker, Git, MySQL, Django, Bootstrap, RESTful API
- **Machine Learning**: Scikit-learn, Tensorflow, Keras, PyTorch

## EXPERIENCE

**Meta**, Menlo Park, CA
*Software Engineer Intern* — May 2022 – Aug. 2022
- Developed a **launchable** relay IP to real IP mapping service in Ads identity prediction for iOS 15 privacy mitigation.
- Wrote **3k+** lines of **PHP** codes for service implementation and **2k+** lines of **SQL (Presto)** for impact evaluation.
- Improved IP coverage by **2.5%**, identity match rate by **11%** in iOS 15.5 and **3%** in the overall Meta Pixel traffic with minimum accuracy drop (1%), leading to **1.7%** offsite conversion gain and **0.08%** of incremental revenue.
- Published one internal technical post about viewer context which leads to a team Better Engineering project.

**Southern Methodist University**, Dallas, TX
*Graduate Research Assistant* — Aug. 2019 – May 2023
- Benchmarked and developed machine learning models to explore hidden protein conformational spaces.
- Launched two public websites in **Django** on high computing center for accurate protein allosteric sites prediction.
- Responsible for the group's **Tech Lead** in designing research directions and writing funding proposals.
- Initiated automated and customized development workflow with **CI/CD** via GitHub Actions.

## PROJECTS

**Deep Learning Enabled Protein Conformation Exploration** — Apr. 2022
- Developed a **variational autoencoder** model to explore protein conformational spaces.
- Designed an efficient algorithm, open source on GitHub (link), that is **3 times faster** than traditional method.
- Publication: Tian, H., Jiang, X., Xiao, S., La Force, H., Larson, E.C. and Tao, P. LAST: Latent Space Assisted Adaptive Sampling for Protein Trajectories. *arXiv:2204.13040*. **ICML 2022 AI4Science Workshop** (link).

**PASSer: Protein Allosteric Sites Server** | http://passer.smu.edu — Sept. 2021
- Advanced the state-of-the-art prediction accuracy of top 3 protein pockets to **84.9%** through **extreme gradient boosting** (XGBoost) and **graph convolutional neural networks** (GCNNs).
- Launched a web server with **Django** and **JSmol** (a **JavaScript** framework) for job submission and protein visualization with web pages written in **HTML/CSS** and improved UI experience using **Bootstrap**.
- Improved job execution time to less than **1 second** and has handled **30000+** visits and **1500+** jobs.
- Publication: Tian, H., Jiang, X. and Tao, P. PASSer: Prediction of Allosteric Sites Server. *Machine Learning: Science and Technology*, 2021, 2, 3, 035015. (link)

## AWARDS

- Research and Innovation Week Dean's Award, Southern Methodist University, May 2021 and Apr 2022
- Graduate Research Assistant Award, Southern Methodist University, May 2021
- Outstanding Teaching Assistant, Southern Methodist University, May 2020