JIAHAO FAN

My Github page

EDUCATION

Peking University September 2016 - July 2020
BS in Biological Science and Physics (double major) *Beijing, China*

Peking University September 2020 - present
PhD student in Theoretical condensed matter physics
Supervisor: Dr. Huaqing Huang *Beijing, China*

PUBLICATION

1. Fan, J., Li, Z., et al. Accurate Conformation Sampling via Protein Structural Diffusion. 2024 (Draft).
2. Fan, J., Wang, Y., Zhang, L. Rid-kit: A package for developing enhanced sampling using reinforced dynamics. 2024 (Draft).
3. Fan, J., & Huang, H. (2022). Topological states in quasicrystals. Frontiers of Physics, 17(1), 1-20.
4. Zhang Q, Fan, J., Zhang T, et al. Visualization of edge-modulated charge-density-wave orders in monolayer transition-metal-dichalcogenide metal[J]. Communications Physics, 2022, 5(1): 1-7.
5. Huang, H., Fan, J., Li, D., & Liu, F. (2021). Generic orbital design of higher-order topological quasicrystalline insulators with odd five-fold rotation symmetry. Nano Letters, 21(16), 7056-7062.

RESEARCH EXPERIENCE

Peking University Sep 2018 - June 2018
Researcher, Supervisor: Dr. Chao Tang and Dr. Louis Tao *Beijing, China*

· Biological neural network realization of temporal difference learning.
-Using Matlab to implement a synfire chain model to realize some aspects of TD-like learning.

Flatiron Institute, Simons Foundation June 2019 - Aug 2019
Summer Intern, Supervisor: Dr. Dmitri Chklovskii *New York, NY, USA*

· Evaluating the Motion Detection Model of flies.
-Using Matlab to evaluate the performance of different motion detection models under different parameter settings.

Wolfram Research June 2020 - July 2020
Summer School student (Remote), Supervisor: Dr. Markus van Almsick *Waltham, MA, USA*

· Temporal evolution of cond-mat topics on Arxiv.
-Web crawling the ArXiv articles related to cond-mat from 1992-2020.
-Using SciBERT to embed the title and abstract information in arrays.
-Train a network to learn the connection between the title-abstract and the topic of articles.
-Dimension reduction of the feature vectors and see the evolution through time.

Peking University July 2021 - Dec 2021
Researcher, Supervisor: Dr. Huaqing Huang and Dr. Yu Zhang *Beijing, China*

· Visualization of Edge-Modulated Charge-Density-Wave Orders in Monolayer Transition-Metal-Dichalcogenide Metal.
-Using Quantum Espresso software to perform first-principle calculations (DFT) to analyze the materials properties.

DP technology June 2022 - Jan 2024
Research Intern, Supervisor: Dr. Linfeng Zhang *Beijing, China*

· Development of Rid-kit software.
Rid-kit Development Repo
· Using Rid-kit to detect the allosteric sites of proteins.

· Using Rid-kit to calculate the free energy surface of chemical reactions in atomic layer decomposition (ALD).
· Method development of protein generative model.
-Using diffusion model to train a protein generative model on PDB database, and sample from the trained model to get diverse protein structures.

Beigene Feb 2024 - June 2024
Research Intern, Supervisor: Dr. Yue Dai *Beijing, China*

· Allosteric site detection using generative model and molecular dynamics.

PROJECTS

Simple MD software using L-J potential Sep 2021-Dec 2021
Coursework *Beijing,China*

· Write a C++ software to do simple MD simulation (L-J potential).
project Github repo

SELECTED AWARDS AND HONORS

- Suzhou Industry Park Scholarship , Peking University. 2017
- WuSi Scholarship, Peking University. 2018
- Excellent graduate student of Peking University. 2020
- President Scholarship of Peking Univeristy (For graduate students). 2022

TECHNICAL SKILLS

Programming Languages	Python, MATLAB, C++ , LaTex, Wolfram Language
Web skills	Simple web crawling
Languages	Chinese (native), English: TOEFL 100, GRE 327

INTERESTS

Basketball Badminton Table Tennis Rubik's Cube (sub 15 average at best)