Utkarsh Saraswat

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Education

M.Sc, Computational Science and Engineering | *Technical University of Munich* | *2022-25*
- **Master's thesis:** Optimized basis sets for electronic structure and quantum chemistry
- **Relevant courses:** Advanced Quantum computing, Quantum Information Theory
  Advanced Electronic Structure, Simulation of Quantum Devices, Computational Materials Design

B.Tech, Chemical Engineering | *Indian Institute of Technology, Mumbai* | *2015-19*
- **Bachelor's thesis:** Computational analysis of Cell Mechanics (**Undergraduate Research Award**)

Work Experience

Werkstudent - Software Developer | *Rohde & Schwarz, Munich* | *2023-24*
- Reduced test run time of telecommunication simulator by 50 % via efficient caching and bottleneck removal

Software Engineer | *Siemens Digital Industries Software, Pune, India* | *2019-22*
- Developed cross environment utility between **Java** and **javascript** enabling image based testing in cucumber
- Developed utility in **python** to extract data from 5000+ tests in 2-5 minutes and post in **MySQL** database
- Built CLI based airport simulator in **C++** from scratch simulating flight scheduling and emergency landing

Process Engineering Intern | *Aditya Birla Group, Grasim Industries, Bharuch, India* | *2018*
- Built simulation of existing Poly aluminum chloride plant with 80 % accuracy for retrieving unknown parameter values and implementing design changes using **MATLAB**

Simulation Intern | *Nanosniff Technologies (MEMS startup based in IIT Mumbai), India* | *2017*
- Performed simulation of micro-machines in **ANSYS** to obtain threshold flow rate and bending stress

Selected Projects and Seminars

Variational quantum algorithms | *Seminar : Advanced Topics in Quantum Computing* | *2024*
- Implemented Quantum deflation and other NISQ algorithms for calculation of excitation energy in molecules

NN architecture for interaction energy | *Seminar : Applications of Scientific Computing* | *2023*
- Proposed hybrid neural network architecture composed of Graph Neural Networks and Convolution Neural Network for prediction of interaction energies in material science simulation

Prediction of molecular configuration | *Course project : Computational Materials Design* | *2023*
- Predicted stable configuration in DFT simulations of molecules using RNN and Graph neural networks

Carbon footprint tracker | *Course Project: Advanced programming, TUM* | *2022-23*
- Built CLI app using **C++** to calculate carbon footprint from daily life activities using graph processing

Extra-Curricular

Generative modeling and simulation | *Business planning seminar, UnternehmerTUM* | *2023*
- Led team of four into an entrepreneurial conceptualization to build an AI based modeling and simulation framework "Beehive" designed to simulate micro-bio scale phenomena

Competitions Manager | *AZeotropy (Chemical Eng Symposium of IIT Bombay)* | *2017-18*
- Worked on ideating and executing innovative competition for Chemical engineering students across India

Skills

Technical | *Python, C++, JavaScript, MATLAB* | *Pytorch, Linux, Qiskit*
Soft | *Critical thinking, Problem solving* | *Teamwork, Leadership*