Utkarsh Saraswat

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Education

M.Sc Technical University of Munich, *Computational Science and Engineering* 2022 – 2025

- Practical Course - Experimental Evaluation of modern Computing Systems and Accelerators
- Master Thesis - Optimized basis sets for electronic structure calculations (ongoing)

B.Tech Indian Institute of Technology Bombay, *Chemical Engineering* 2015 – 2019

- Bachelor thesis : Computational analysis of cell mechanics
  (Undergraduate Research Award 01)

Work Experience

Rohde & Schwarz Gmbh, *Working student in software, Munich, Germany* 2023 – 2024

- Bench-marking and performance optimization of telecommunication simulator

Siemens Industrial Software India pvt Limited, Pune, *Software Engineer, Pune, India* 2019 – 2022

- Development of various QA and auxiliary frameworks for Siemens Active workspace
- Parallelization and performance optimization of existing tests
- Exploration of several proof of concepts to integrate automation of Active Workspace
- Built airport simulator from scratch as part of training hackathon

Aditya Birla Chemicals, Grasim Industries, *Process Engineering Intern, Bharuch, India* 2018

- Building accurate large scale simulation of existing Poly aluminum chloride plant for retrieval of unknown parameters and design changes
- Development of user friendly dashboard to keep track of plant analytics

Nanosniff Technologies (MEMS R&D Startup based in IIT Bombay) 2017
Modeling and Simulation Intern, Mumbai, India

- Thermo-mechanical simulation of micro-machines in ANSYS to test various threshold parameters

Seminars

Chair of Simulation of Nanosystems for Energy Conversion

- Review of application of Graph Neural networks in prediction of cohesive forces in small molecules

Advanced Topics in Quantum Computing

- Review of NISQ algorithms for calculation higher level excitation energy of molecular systems

Projects

Prediction of molecular configuration using graph neural networks

- Used RNN and Graph neural networks to predict converge point of DFT simulations of small molecules

Carbon-Footprint-Tracker

- Developed graph-theory based carbon life cycle calculation tool of various items and activities

Modeling and simulation of cell mechanics and Cytometry

- Developed numerical methods for calculation of non linear forces in cell mechanics
- Extension of existing framework enabling simulation of several new scenarios in cell interaction

Modeling Transcription Network using Graph theory

- Proposal of data-enhanced dynamic model of transcription network in an animal cell's genome

Process design of chemical plant to produce of tert-Butanol

- semester long team project to propose entire blueprint to set up a chemical plant based on extensive back-ground research and simulations

Independent initiatives

Beehive - Generative modeling and simulation of cells, Business planning seminar, Unternehmer-TUM

- Led team of four into an entrepreneurial conceptualization to build an AI based modeling and simulation framework

Extra-curricular

AZeotropy, IIT Bombay (Chemical Eng Symposium of IIT Bombay), 2017-2018

- Worked as competition manager on ideating and executing innovative competition for Chemical engineering students across India.

Team leader : Institute Technical Summer Project , 2016

- Developed tree climbing robot with 3 other members from scratch

Co-coordinator - TechFest IITB 2016, 2016

- Volunteered a campaign for free diabetes check-up for 200+ individuals
- Organized execution of lectures in an auditorium during Techfest 2016

Flutist - Hostel 6 music band, 2016

- Participated in Sophomore Music competition as the flutist in the Hostel team a securing third position

Skills

Technical Software development (C++, Python, JS); Performance Benchmarking; Modeling and Simulation

Soft/Managerial: First principle thinking, Problems solving, Innovative Design thinking