# Utkarsh Saraswat

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## Education

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

- Specialization - Computational Electronics, Quantum Computing
- Practical Course - Experimental Evaluation of modern Computing Systems and Accelerators
- Master Thesis - Optimized basis sets for electronic structure calculations

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

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

## Experience

**Rohde & Schwarz Gmbh**, Working student in software (part time) 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)** Mumbai, India 2017
Modeling and Simulation Intern

- 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, UnternehmerTUM

- 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 (cpp, python, js); Performance Benchmarking; Modeling and Simulation

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