# Yogen Borkar

*Mumbai, India*

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## Education

- **Birla Institute of Technology and Science, Pilani** — *Goa, India*
  *Bachelor of Engineering in Chemical Engineering* — *August 2018 to December 2021 (expected)*
  **Cumulative GPA:** 8.57
- **PTVA's Sathaye College** — *Mumbai, India*
  *Maharashtra Higher Secondary School Certificate (Class 12)* — *Graduated May 2018*
  **Percentage:** 87.08%

## Research Experience

**Research Intern, BITS Pilani, Goa** — *Aug 2021 - Present*
*Thesis under Prof. Sutapa Roy Ramanan*
- Synthesized an electrochemical sensor for detecting glucose and insulin using graphene-nickel nanocomposites.
- Optimizing and standardizing sensor response

**Research Intern, Virtual Sense Global Technologies Ltd., Pune, Maharashtra** — *May 2021- July 2021*
*Under Dr. Girish Arbale*
- Fabricated optimal nanomaterials for breath-based detection of diabetes
- Ideated and synthesized a new nanomaterial and optimized the composition of an existing sensor
- Increased sensitivity and unique response towards specific biomarker

**Student Researcher, Team iGEM BITS Goa** — *Oct 2019– Nov 2020* (Link to project)
*Under Dr. Sumit Biswas*
- Designed genetically engineered bacterial system to tackle post-harvest losses in sugarcane
- Simulated the toxin-antitoxin system, fructose biosensor and protein-DNA interactions
- Designed process for scale up and conducted economic feasibility
- Awarded the **gold medal** and **two special prizes** at the International Genetically Engineered Machines competition 2020

**Research Intern, Dhio Research and Engineering Pvt. Ltd.** — *May 2020 – June 2020*
- Researched on multiscale modeling for materials and worked on 'Dissipative Particle Dynamics Modeling for A Carbon Nanocomposite in J-OCTA'
- Evaluated the elastic properties of a polystyrene based nanocomposite

## Projects

**Life Cycle Sustainability Assessment** — *Jan 2021- May 2021*
*Under Prof. Sampatrao Manjare*
A design-oriented project in studying the limitations of applying Life cycle Assessment methodology to nanotechnology

**Study on the effect of coagulation bath on the properties of the nanofibers synthesized via electrospinning** — *Aug 2020- Dec 2020*
*Under Prof. Sutapa Roy Ramanan*
- Studied about effects of various parameters involved in wet electrospinning on fabrication of different morphologies of polymeric nanofibers
- Studied about applications of helically coiled nanofibers in fuel cells

**Production of Insulin from Recombinant E. Coli** — *Aug 2021- Dec 2021*
*As a part of Biochemical Engineering course*
- Designed a cyclic fed-batch bioreactor for production of rec. insulin from E. Coli

**Production Process for Sulphuric Acid** — *Aug 2021- Dec 2021*
*As a part of Process Design Principles course*
- Modeled and simulated the double contact process for manufacture of sulphuric acid in ASPEN

## Awards

**Gold Medal, Special Prize in Best Composite Part and Best Software Tool, 'Sugargain', International Genetically Engineered Machines competition 2020**

*Biochemical Modeling Head* — *November 2020*

- Designed genetically engineered bacterial system to tackle post-harvest losses in sugarcane

**Second Prize, 'Lab on a Brick', IDEATHON, BITS Goa**

*Project Lead* — *October 2019*

- Designed a customizable point-of-care diagnostic device using LEGO bricks based on *microfluidics* and *biosensing* principles

## Technical Skills

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|---|---|
| **Programming Languages:** | MATLAB, Python, C, R (tidyverse, plotly, highcharter) |
| **Softwares:** | COMSOL, ASPEN Plus, J-OCTA, AutoCAD |

## Relevant Courses

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|---|---|
| **Chemical Engineering:** | Introduction to Nanoscience, Material Science and Engineering, Biochemical Engineering, Kinetics and Reactor Design, Process Design Control, Transport Phenomenon, Numerical Methods, Thermodynamics, Engineering Chemistry, Mass Transfer, Separation Processes |
| **Biology/ Chemistry:** | Molecular Biology of the Cell, Bio and Chemical Sensors, Supramolecular Chemistry, Polymer Chemistry |
| **Mathematics:** | Mathematics I (Multivariable and Vector Calculus), Mathematics II (Linear Algebra and Complex Analysis), Mathematics III (Differential Equations), Probability and Statistics |

## Other Experience

- **Teaching Assistant for Heat Transfer and Separation Processes:** Responsibilities included conducting tutorials, setting assignments and class tests, correcting answer sheets
- **Instructor for Applications of Engineering Principles to Life Sciences:** Responsibilities included teaching module on chemical kinetics and mathematical modeling in biology

## Volunteer Experience

- Volunteered to teach and help in solving doubts of students in BIO F111 General Biology for the on-campus Academic Assistance Program, an out of classroom, peer-based learning setup
- Taught the 9$^{th}$ and 10$^{th}$ standard students of A. A. Padhye School, Devrukh, Ratnagiri, under the able guidance of Mrs. Jennifer Gadgil, giving me valuable knowledge and insight into the efforts that are put into teaching

## Extra-curricular Activities

- Coordinator and Convener at Srutilaya, the BITS Goa Indian Classical Music club; responsibilities involved organizing events with internationally acclaimed artists to improve awareness of Indian Classical Music on campus, maintaining faculty relations and event finances and logistics
- Harmonium Player; performed and accompanied on harmonium in multiple cultural events in school and college