# Dwara Nikhesh Babu

Final Year Undergraduate
Mechanical Engineering

nikhesh.dwara@gmail.com | +91-7075624678
Portfolio-website | nikheshd | nikhesh

## Academic Qualifications

| Year | Degree/Certificate | Institute | CPI/% |
|---|---|---|---|
| 2019 - 2023 | B.Tech | Indian Institute of Technology, Kanpur | 8.43/10 |
| 2019 | BIEAP (XII) | FIITJEE Junior College, Visakhapatnam, AP | 9.75/10 |
| 2017 | BSEAP (X) | The Sun School, Vizianagaram, AP | 10/10 |

## Scholastic Achievements

- Secured Overall **1st position** in Formula Bharat 2023 and Business Plan Presentation events in Electric category *2022*
- Secured **18th position** in Formula Bharat 2021 (FB2021) competing against National and International teams *2021*
- Secured **All India Rank 22** in Physics conducted by SIMO Education Indian Physics Olympiad (SIPhO) *2015*
- Secured **Olympiad rank 17** and scored 86.50/100 in International Master Mathematics Olympiad (IMMO) *2012*

## Projects, Internships

- **Full Stack Development - MERN stack** (MongoDB, Express, React, Node) (*Aug'22 - Sept'22*)
  - Developed dynamic, responsive and maintainable web applications using HTML5, CSS3, ReactJS with my own style sheets.
  - Built my own **Portfolio-website**, **Typing-Test App** - measures typing speed, **Todo App** to manage to-do tasks.
  - Learnt Node.js, ExpressJS Server Framework, SQL to develop CRUD, Secure APIs using HTTP server, JSON Web Token.
- **PAT Implementation in Nanoemulsions** | **Dr. Reddy's Laboratories**, Hyderabad | Internship (*May'22 - July'22*)
  - Researched **Process Analytical Technology** (PAT) and learnt about NanoFlowSizer, in-line viscometer and refractometer.
  - Learnt about **flow correction algorithms**, Spatially-Resolved Dynamic Light Scattering, Low-Coherence Interferometry.
  - Developed a mathematical model in MATLAB that gives plots on critical attributes and parameters of in-line viscometer.
- **Sports Timetabling Problem** | **Analytics in Transport and Telecom** course project (*Jan'22 - April'22*)
  - Researched time-constrained round-robin timetables and how they vary with different input parameters and constraints.
  - Developed a program in C++ using IBM CPLEX Optimizer to make timetables and a well-optimized **heuristic**.
  - Solved **optimization problems** like warehouse location, cutting stock and optimal reservation which have huge applications.
- **Game of Blocks** | **Programming Club**, IIT Kanpur (*May'21 - July'21*)
  - Learnt basic mechanisms of **Blockchains**, cryptocurrencies and basics of **Game Theory** and Mechanism Design.
  - Implemented First-Past-the-Post voting and Boston Student Assignment Mechanism (school choice problem) in **Solidity**.
  - Constructed a simple mining algorithm in Python and a **Smart Contract** with a token called MetaCoin in Solidity.
- **Dragons-vs-Terminators** | a Tower Defense game in Python (*April'20 - May'20*)
  - Learnt **Python**, Standard Library, third party packages, regular expressions, networked programs(HTTP), web services(API)
  - Implemented Dragons-vs-Terminators game where the goal is to defend the Dragon's territory by obstructing the Terminators.
  - Developed **15** dragon types based on armor, food, damage and attacking strategy using **Object-Oriented Programming**.

## Technical Skills

- **Programming Languages:** C/C++, Python, MATLAB/Octave, JavaScript, Solidity
- **Web Development:** HTML5, CSS3, Bootstrap4, JQuery, NodeJS, ExpressJS, React, Angular, SQL
- **Tools and Utilities:** Git, Linux Shell Utilities, LaTeX, IBM CPLEX, Solidworks, Ansys

## Position of Responsibility

- **Senior Team Member** and **Vehicle Dynamics Lead** - IITK Motorsports (*April'21 - April'22*)
  - Assisted in overall designing, mainly vehicle dynamics, of a **Formula Student Electric** vehicle with a team of 30+ members.
  - Designed and developed tools and solutions used across subsystems of the team using MATLAB, Simulink and Python.
  - Prepared the team for Formula Bharat 2021 and 2023 and coordinated with team leads to improve overall performance.

## Coursework

- **Online courses**: Data Structures, NxtWave • Full Stack Development, NxtWave • Machine Learning by Stanford, Coursera
- **Undergraduate**: Fundamentals of Computing • Project Management • Modern Cryptology • Linear Algebra and ODEs Real Analysis and Multivariable Calculus • Analytics in Transport and Telecom • Introduction to Economics
- **Minors**: Control Systems in Electrical Engineering • Industrial and Management Engineering

## Other Projects

- Developed a MATLAB model to understand and illustrate the non-intuitive **Dzhanibekov Effect** based on the input. *2021*
- Developed a detailed CAD model of a mechanical wrist watch in Fusion360 and implemented automatic-winding. *2021*
- Implemented a **Photo OCR** system using image processing and machine learning in MATLAB. *2020*

## Extra-Curricular

- Built a **Remote Controlled Glider** in a team of 4 members in Aeromodelling Club workshop *2019*
- Participated in Rubik's Cube competition and Rubber powered glider competion in Takneek'19 *2019*
- Represented my school at **State Level** Painting Competition'13 conducted by Ministry of Power, Government of India *2013*