Dwara Nikhesh Babu

Final Year Undergraduate
Mechanical Engineering

nikheshd@iitk.ac.in | nikhesh.dwara@gmail.com
+91-7075624678 | nikheshd | nikhesh

Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2019 - 2023	B.Tech	Indian Institute of Technology, Kanpur	8.5/10
2019	AP State Board(XII)	FIITJEE Junior College, Visakhapatnam	9.75/10
2017	AP State Board(X)	The Sun School, Vizianagaram	10/10

Scholastic Achievements

- Secured **All India Rank 3939** in JEE(Main) Paper-1 among 1.2 million candidates *2019*
- Secured **All India Rank 5322** in JEE(Advanced) among the 160,000 shortlisted candidates *2019*
- 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*

Experience

- **PAT Implementation in Nanoemulsions** | **Dr. Reddy's Laboratories** | Hyderabad (*May'22 - July'22*)
  - Researched Process Analytical Technology (PAT) and learned about NanoFlowSizer, in-line viscometer and refractometer.
  - Learned about Spatially-Resolved Dynamic Light Scattering, Low-Coherence Interferometry, **flow correction algorithms**.
  - Developed a mathematical model in MATLAB that gives plots on critical attributes and parameters of in-line viscometer.

Key Projects

- **Formula Student Electric** | **IITK Motorsports** *(Sept'19 - ongoing)*
  Faculty Advisors: Dr. Santanu De, Dept of Mechanical Engg. and **Prof. Ramprasad Potluri**, Dept of Electrical Engg.
  - Assisted in the **overall designing** of an FS Electric Vehicle with a team of 30+ students and participated in **FB2021**.
  - Calculated forces at suspension points in MATLAB using **Wheel Loads** that are calculated based on load transfers.
  - Designed and analyzed **wheel assembly** in Solidworks, Ansys respectively, with design targets and under extreme conditions.
- **Game of Blocks** | **Programming Club**, IIT Kanpur (*May'21 - July'21*)
  - Learned basic mechanisms of **Blockchains**, cryptocurrencies and various consensus mechanisms in Blockchain systems.
  - Implemented First-Past-the-Post voting and Boston Student Assignment Mechanism (school choice problem) in **Solidity**.
  - Implemented a simple mining algorithm in Python and a Smart Contract with a token called **MetaCoin** in Solidity.
- **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 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.

Technical Skills

- **Programming Languages:** C, C++, Python, MATLAB, HTML, CSS, JavaScript, SQL, LaTeX, Solidity
- **Tools and Utilities:** MERN Stack (Mongo DB, Express JS, React, Node JS), Git, Linux Shell Utilities, IBM CPLEX

Position of Responsibility

- **Senior Team Member** and **Vehicle Dynamics Lead** - IITK Motorsports (*April'21 - April'22*)
  - Mentored second-year students in vehicle dynamics, mainly wheel assembly and suspension system.
  - Prepared the team for Formula Bharat Virtuals 21-22 and Rev-it!, a virtual racing competition.

Course

(°: *Ongoing course*)

- **Online courses**: Data Structures, NxtWave • Machine Learning by Stanford • Python and OOP Concepts, IB Hubs
- **Undergraduate**: Fundamentals of Computing • Modern Cryptology • Project Management° • Linear Algebra and ODEs
  Real Analysis and Multivariable Calculus • Analytics in Transport and Telecom • Complex Variables
  Basics of Modern Control Systems • Introduction to Economics° • Introduction to Electronics
- **Minors**: Electrical Engineering (Control Systems), Industrial and Management Engineering

Other Projects

- Created a **tower-defense game** called Dragons-vs-Terminators using Python and OOP. (Self Project) *2020*
- Implemented a **Photo OCR** system using image processing and machine learning in MATLAB. (Self Project) *2020*
- 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*

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*