

NADEC BIJU

Mechanical Engineering Graduate, 2022–2026, CUSAT
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Education

Cochin University of Science and Technology (CUSAT)

Bachelor of Technology, Mechanical Engineering | CGPA: 8.53

2022 – 2026

Kochi, Kerala

Fab Academy 2026 — Super Fab Lab, Kochi

Fab Academy Diploma — Digital Fabrication

Jan 2026 – Jul 2026

Global program run by the Fab Foundation; 20 weeks of hands-on fabrication and embedded systems

Kochi, Kerala

- Completed 20 weeks of technical assignments spanning CAD, CNC machining, laser cutting, molding & casting, PCB design/production, embedded programming, networking, and system integration.
- Final Project: **Smart Tool Cabinet** — an RFID-based tool tracking system with solenoid-actuated drawer locks, NeoPixel status indicators, ATtiny1624 slave nodes, a XIAO ESP32-S3 master controller, and a Firebase/Flutter backend.
- Built interactive tools including a laser-kerf calculator, a 4-bar linkage calculator, and a computer-vision web tool (Urumi Vision) as part of weekly assignments.
- Portfolio: fabacademy.org/2026/labs/kochi/students/nadec-biju

Skills

Technical Skills: IPG CarMaker, Metal Fabrication, 3D Printing, SolidWorks, Autodesk Fusion 360, Carpentry

Fab Academy Skills: Electronics Design & PCB Milling (KiCad), Embedded Programming (ATtiny, XIAO ESP32-S3/C6, Arduino), Circuit Simulation (Wokwi), Computer-Controlled Machining (CNC Routing/Milling), Laser Cutting, Molding & Casting, Computer-Controlled Cutting, Networking & IoT, RFID Systems, Firebase & Flutter

Soft Skills: Project Management, Problem Solving, Communication

Experience

Product Development Intern – Founding Team (3rd Member)

Jan 2025 – Aug 2025

Pre6 Tech Pvt Ltd (AI startup by Amod Malviya, Founder of Udaan & ex-CTO Flipkart, and Rishi Kedia)

Bengaluru, Karnataka

- Assisted in the development of an AI-powered product in its early stage.
- Conducted testing, identified bugs, and suggested feature improvements to enhance product competitiveness.
- Collaborated with the founding team to refine user experience and ensure product-market alignment.
- Contributed to technical discussions on scaling, deployment, and product roadmap decisions.

Team Captain

Apr 2025 – Present

Tarusa Motorsports

Kochi, Kerala

- Leading a 30+ member student team in designing and building Hydrogen Baja vehicles for national competitions.
- Overseeing CAD design, vehicle dynamics, powertrain integration, and manufacturing workflows.
- Coordinating sponsorships, budgeting, and technical reviews to ensure project delivery within deadlines.
- Mentoring juniors in CAD, FEA, and design-for-manufacture practices.

Team Manager

Apr 2024 – Mar 2025

Tarusa Motorsports

Kochi, Kerala

- Led the team to AIR 7 – Overall Ranking; AIR 1 – Cost Award; AIR 1 – Statics; AIR 2 – Altair Simulation; AIR 3 – Sales Award; AIR 4 – Sustainability; AIR 5 – Design.

Powertrain Subsystem Member

Jan 2023 – Mar 2024

Tarusa Motorsports

Kochi, Kerala

- Worked on the powertrain and manufacture of the buggy developed for the Hydrogen-BAJA competition conducted by SAE India (Team bagged AIR 1).
- Dealt with vehicle dynamic simulation using IPG CarMaker.

Trackside Intern, Indian F4 & Indian Racing League 2025 Season

Indian Motorsports Academy – MEGA (Motorsport Engineering Graduate Accelerator)

Aug 2025 – Present

Ernakulam, Kerala

- Selected as a trackside intern for Indian Formula 4 and Indian Racing League (IRL) championships under the MEGA program.
- Gained hands-on experience in race engineering, assisting with car setup, suspension tuning, tyre data collection, and garage operations.
- Worked with professional race engineers and mechanics to understand real-time decision-making during practice, qualifying, and races.
- Applied knowledge of vehicle dynamics, data logging, and pit operations to support teams across multiple race weekends.
- Strengthened technical and teamwork skills in a high-pressure motorsport environment at an FIA-certified single-seater series.

Observing Intern

Cochin Shipyard Limited

May 2024 – Jun 2024

Kochi, Kerala

- Completed an observational internship covering the full breadth of shipyard operations – design, utilities & maintenance, planning & project management, inspection & quality control, ship building, ship repair, business development, and safety & training.
- Studied the interworking between departments to understand how a large-scale shipbuilding organization plans and executes projects end to end.

Vice Chairman

SAE CUSAT

Mar 2024 – Apr 2025

Kochi, Kerala

- Led the SAE CUSAT student committee for the academic year 2024-25.
- Managed flagship events including Inventiva, SAE INDIA Tier Events, and Cadable.
- Coordinated logistics, sponsorships, and technical sessions, ensuring smooth execution and high student participation.

Founder

Layer6 – Printfarm and CAD Consultancy (Layer6.in)

Jan 2025 – Present

Ernakulam, Kerala

- Founded a CAD design and 3D printing services firm catering to customized prototyping, product design, and reverse engineering solutions.
- Delivered end-to-end services including CAD modeling, rapid prototyping, reverse engineering, and batch production using advanced 3D printing technologies.
- Developed an online platform for customers to submit CAD/STL files and order parts, enabling streamlined client interaction.
- Built industry collaborations to expand into manufacturing services for students, startups, and engineering projects.

Design Lead

Hermes CUSAT

Sep 2023 – Feb 2024

Ernakulam, Kerala

- Led the design and development of the Hermes-Cycle for the Bicycle Design Challenge conducted by SAE India Southern Division.
- Secured AIR 5 – Overall Ranking and AIR 1 – Best Design for innovative engineering and aesthetics.

Intern

TinkerHub

Dec 2023 – Feb 2025

Ernakulam, Kerala

- Managed the 3D printer and the maker-station.
- Was the resident Maker and mentored students regarding hardware-related projects.
- Handled the LinkedIn page of TinkerSpace.
- Conducted events such as Maker Thursday (hardware discussions) and Kutty Maker (intro to hardware projects for school kids).

Technical Head

MESAC (Mechanical Engineering Students Association CUSAT)

Apr 2024 – Apr 2025

Ernakulam, Kerala

- Managed the website of MESAC, including hosting and design.
- Member of the MESAC taskforce from Jan 2023.

Intern

CUSAT Fablab

Nov 2023 – Nov 2025

Kochi, Kerala

- Assigned to the development of a solid-state fan using piezoelectric crystals, exploring innovative alternatives to conventional cooling systems.
- Designed and tested CAD models to study airflow efficiency and structural behavior.
- Applied rapid prototyping methods (3D printing, CNC, laser cutting) to create and iterate proof-of-concept designs.
- Gained hands-on experience in digital fabrication, material characterization, and functional prototyping.

Co-Founder

SlumberTech

Aug 2023 – Aug 2025

Kochi, Kerala

- Co-founded the startup SlumberTech.
- Dealt with the ideation of the smart bed.
- Designed the CAD models and the cooling loops for temperature control.
- Created the control program for ESP32 which controls the bed temperature.

Projects

6-DOF Robotic Arm with Quasi-Direct Drive Actuators (Ongoing)

- Designed and built a fully 3D-printed robotic arm, integrating self-designed quasi-direct drive BLDC actuators with cycloidal gear drives for high torque density and precision.
- Entire actuator system is fully 3D printable, enabling low-cost and easily replicable robotics hardware.
- Planned application: development of a metal 3D printer using an FDM-style MIG welding deposition approach for additive manufacturing of metals.

Autonomous Self-Driving Car Prototype (Ongoing)

- Developing a self-driving car system without LiDAR or radar, relying solely on computer vision and deep learning.
- Implementing perception and control stack using OpenCV, Python, and Keras, enabling lane detection, obstacle avoidance, and decision-making from camera input.
- Focused on creating a cost-effective approach to autonomy by avoiding expensive sensors and leveraging end-to-end AI models.

Turbojet Engine Prototype – CUSAT Final Year Project (Completed)

- Designed and built a working turbojet engine prototype using an automotive turbocharger as the compressor and turbine, completed as the B.Tech final year project at CUSAT.
- Completed detailed CAD modeling of the full system.
- Carried out manufacturing, assembly, and testing to a working final build.

Ouija Board – CUSAT Techfest DISHNA

- Designed the mechanical system and oversaw manufacturing of an interactive Ouija board.
- System used voice-to-text conversion and a chatbot to generate responses mapped to board coordinates.
- Supervised fabrication of casing, inner rails, motor mounts, and pulley systems.

3D Printing & Digital Fabrication

- Extensive hands-on experience with 3D printers: Ultimaker S5, Bambu Labs A1, Ender3, Ender3 S1 Pro, Ender3 V2 Neo.
- Expert in 3D printer maintenance, troubleshooting, and modifications.
- Converted FDM printers into 2D plotters and laser engravers through hardware/software tinkering.
- Experimented with diverse printing techniques to expand material and process expertise.
- Worked with vinyl cutters, repurposing them for unconventional uses such as automated writing on A4 sheets.

Hydrogen Fuel for IC Engines

- Generated HHO gas (hydroxy gas) by electrolysis of water.
- Successfully blended hydrogen with petrol and tested in a 50cc IC engine (bush cutter engine).

Licenses & Certifications

SOLIDWORKS Additive Manufacturing Associate – Dassault Systèmes, Issued Sep 2024 · Credential ID: C-J7MPYLHQZW

SOLIDWORKS CAD Design Associate – Dassault Systèmes, Issued Sep 2024 · Credential ID: C-X4J6T3B52M

SOLIDWORKS Electrical Design Associate – Dassault Systèmes, Issued Sep 2024 · Credential ID: C-7ZNBHKPMFY

SOLIDWORKS Sustainability Associate – Dassault Systèmes, Issued Sep 2024 · Credential ID: C-K3AJ7RLUGQ