

Atharva Chauhan

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EDUCATION

Netaji Subhas University of Technology (NSUT), Delhi

June 2029

B.Tech in Mechanical Engineering (3rd Semester)

Tagore International School, Vasant Vihar

April 2011 - March 2025

Senior Secondary (Class XII), CBSE

March 2025

Secondary (Class X), CBSE

March 2023

DISTINCTIONS

STEM Challenge 2023 | Study Melbourne, Government of Victoria, Australia

2023

- Ranked 14th globally in an international engineering and technology challenge open to students worldwide.

Google India's Code to Learn | National App Development Competition

2021

- Top finalist in India in the Class 9 & 10 category; placed 6th in App Development out of 200,000+ participants.

F1 in Schools India, Season 2 | Best Trainee - Coordinator's Choice Award

2018 - 2019

- Served as Team and Design Lead for Team Volcanions, engineering one of the most aerodynamic cars in the challenge.

PROJECTS

Arsenal | 6-DOF Robotic Arm – Custom STM32 Coordinator Board

In progress

- Designed and completed a custom STM32F446RET6 coordinator board that serves as the arm's real-time control layer, driving TMC5160 and TMC2209 stepper drivers with closed-loop feedback from MT6835 magnetic encoders on every joint.
- Built around a distributed ROS architecture: a Raspberry Pi 3B+ runs MoveIt for high-level motion planning, streaming trajectories down to the STM32 board, which executes them in real time across NEMA 23 motors at the proximal joints and NEMA 17s at the wrist, driving custom 3D-printed planetary gearboxes at each joint.

BeamAnalyser | Full-Stack Structural Beam Analysis Tool

April 2026

- Built a full-stack web app (Flask backend, HTML/CSS/JS frontend) that solves for support reactions, shear force and bending moment diagrams, deflection, bending stress, and safety factor across 6 beam configurations (simply supported, cantilever, overhanging, propped cantilever, fixed-fixed, continuous), using equilibrium equations plus the force method, stiffness method, and three-moment (Clapeyron) equation for statically indeterminate cases.
- Supports point, moment, and uniform/varying distributed loads across rectangular, circular, and I cross-sections in steel, aluminum 6061, or custom materials; renders live shear/moment/deflection charts and a stress heatmap via Chart.js.
- Preview : `beamanalyser.vercel.app`

CAD Designs | Selected CAD Models

- Parametric Bevel Gear System** – Fully parametric bevel gear pair driven entirely by preset variables (contact angle, size, reduction ratio); changing the contact angle alone reshapes the tooth profile and mesh behavior in real time.
- Strandbeest (Theo Jansen Mechanism)** – Miniature version of Jansen's wind-powered "beach animal," using an 11-bar linkage tuned to his "holy number" ratios so a single rotating crank produces a smooth, lifelike walking gait.
- Cycloidal Drive (20:1)** – Compact high-torque gearbox where an eccentric disc wobbles inside a ring gear, converting that motion into a clean 20:1 reduction with 20x torque multiplication; design complete, pending fit and tolerance testing.
- Hyperboloidal Gear Pair** – Gear pair for shafts that are skewed, non-intersecting, and non-parallel; the gear bodies follow a hyperboloid surface to maintain contact across that geometry, effectively a bevel gear for skewed axes.
- Crossed Helical Gears** – Standard helical gear geometry adapted for skewed shafts using point contact; lower load capacity than intersecting gears but simpler to manufacture, the same principle worm gears take to an extreme.
- 3-Stage Planetary Gearbox** – Compound gearbox with three planet gears per stage and a 7:1 reduction at each stage, compounding across three stages for a large overall reduction in a compact footprint.

Additional projects: <https://www.atharvachauhan.me/projects.html>

EXPERIENCE

Pyrotech Tech Club, Tagore International School, Vasant Vihar

Vice President

Jan 2024 – Mar 2025

- Led the club through the organization of Ordin@triXKurioBots 24.0, a large-scale inter-school tech fest spanning photography, programming, gaming, and pitching across 9 events.
- Secured over Rs. 2 lakhs in sponsorships from Kurious, boAt, and other partners; guided members on project development and strategy, earning 5+ overall trophies and 50+ individual awards.

Robotics Head

Apr 2023 – Jan 2024

- Led the robotics vertical of the club, mentoring members on national-level robotics competitions.

SKILLS

CAD & Design: Fusion 360 , Solidworks, Mechanical Design, Parametric 3D Design, 3D Printing & Tolerancing.

Hardware: KiCad, Altium Designer, STM32, ESP32, Power Circuits.

Programming: Python, C/C++, MATLAB

Tools: KiCad, Fusion 360, Solidworks, Altium, Blender, Flask