HARSHDEEP SINGH

ECE undergrad passionate about building intelligent hardware systems and embedded solutions, with hands-on experience in robotics, digital design, and low-level programming..

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2K23/EC/086 GitHub | LinkedIn | Leetcode | HDLbits

EDUCATION

B.TECH(Electronics and Communication Engineering)	2023-2027	Delhi Technological University, New Delhi	8.58
CBSE (Class XII)	2023	Sri Guru Nanak Public School, Adarsh Nagar, Delhi	96.4 %
CBSE (Class X)	2021	Sri Guru Nanak Public School, Adarsh Nagar, Delhi	95.4 %

EXPERIENCE

Senior Software Engineer, Team Inferno DTU, Delhi Aug 2024-Jan 2025

- As Senior Software Engineer for Team Inferno's **Mars Rover** project at DTU, I led the development of **automation**, **teleoperation**, and **object detection systems** using **ROS**, **OpenCV**, and **Arduino**. I focused on building robust control pipelines and integrating **real-time sensor data** for autonomous navigation in unstructured environments. Collaborated closely with hardware teams for seamless system integration and maintained a modular codebase using **Git**. Our team secured **4th place** at the 2024 **International Rover Challenge**.

ACADEMIC PROJECT

NAMBI 2.0 – *A Mars Rover Prototype* | Link | ROS, Gazebo, RViz, OpenCV

- Built and managed the software stack for Nambi 2.0 Mars Rover using **ROS**, **Arduino IDE**, **Gazebo**, **RViz**, and **OpenCV**. Developed autonomous navigation and teleoperation capabilities with refined control algorithms and computer vision for **obstacle detection** and **path planning**. Collaborated with teammates and maintained the codebase using **Git** for version control and streamlined development. Ensured seamless software-hardware integration for optimal performance. Achievements include **4th place** in the **International Rover Challenge** and the **Best Project Management Award**.

BLOCK - *Bluetooth, Voice-Controlled, Obstacle-Avoiding Car* | Link | Arduino | C++

- Built a multifunctional Arduino-based robotic car integrating Bluetooth control, voice recognition, and real-time obstacle avoidance using the **HC-05 module**, **ultrasonic sensors (HC-SR04)**, **servo motors**, and **L293D** motor driver. Programmed in **C++** to enable autonomous navigation and remote control through voice commands and a mobile application, showcasing practical skills in **embedded systems**, sensor interfacing, and robotics.

PORTFOLIO SITE | Link | NextJS, Tailwind CSS, Framer Motion

- Built a responsive portfolio with **Next.js, Tailwind CSS**, and **Framer Motion** to showcase my projects and skills. Features a modern design with smooth animations for a professional, engaging user experience.

TECHNICAL SKILLS

Programming: Python, C++, JavaScript, VHDL, Verilog
Development: React, Next.js, Node.js, MongoDB, MySql, Django, Tailwind, Flutter
Tools: Xilinx ISE Design Suite, LogiSim, Arduino, ROS(Robotics Operating System), Gazebo, OpenCV, RViz, Git
Relevant Coursework: Digital Design, Computer Architecture, Analog Electronics

POSITIONS OF RESPONSIBILITY

President, DTU Bhangra Aug 2025 - Present

- Leading **strategic operations, team leadership, event execution, sponsorship management, digital branding, and cross-team collaborations** to drive organizational growth and sustained competitive success**.**

ACHIEVEMENTS

- **Rank 1** - HDL bits, completed all 182 problems on HDLbits.
- **4th Place** – International Rover Challenge (2024)
- **Top 5** - Tinkercase (Hardware Track Hackathon), IEE DTU (2024)