Umang Parmar
Second Year Undergraduate
Discipline of Electrical Engineering with Minors in Computer Science and Engineering
Indian Institute of Technology, Gandhinagar
23110233@iitgn.ac.in
+91 9313473876
LinkedIn

ACADEMIC DETAILS

Degree	Institute	Year	CPI/%
B.Tech.	IIT Gandhinagar	2023-27	CPI: 8.03
Class XII	Vishwa Vidhyalaya School, Ahmedabad	2023	94.32
Class X	Vishwa Vidhyalaya School, Ahmedabad	2021	95.43

PROJECTS

- **FPGA-Based Beamforming for Medical Imaging [Industrial Project]** [Jan'25-present]
  (Advisor - Prof. Joycee M. Mekie, IIT Gandhinagar) |
  - Developing an FPGA-based beamforming system to enhance ultrasound imaging for breast cancer diagnosis. Utilizing MATLAB, Simulink, and HDL Coder to implement beamforming algorithms with a focus on real-time signal processing and optimization of hardware resources.
  - Conducting initial research on using the CORDIC algorithm to reduce computational complexity and improve FPGA resource efficiency.
  - Aiming to design and validate an efficient hardware prototype using Xilinx System Generator and Ultrascale FPGA.
- **Hand Gesture Controlled Forklift [Group Project]** [Apr'24-May'24]
  (Advisor - Prof. Arup Lal Chakraborty, IIT Gandhinagar) | *Project Link*
  - Designed and built a gesture-controlled 3d printed forklift using a sensor-embedded glove with a MPU6050 and ESP32 modules for wireless communication and control.
  - Implemented real-time hand gesture detection and lifting mechanisms using L293D motor drivers, enhancing safety and efficiency in warehouse operations.
- **Blind Man Stick [Group Project]** [Apr'23-Nov'23]
  (Advisor - Prof. Himanshu Shekhar, IIT Gandhinagar) | *Project Link*
  - Developed a cost-effective assistive device designed to help visually impaired individuals navigate safely by detecting obstacles in real time. The device incorporates ultrasonic and infrared sensors for precise obstacle detection, enhancing the user's ability to move independently.
  - Implemented intuitive haptic and audio feedback mechanisms for seamless user interaction. Designed the prototype to be portable and easy to use, significantly improving safety and mobility for users in diverse environments.
- **Drowsiness Alert System for Drivers[Group Project]** [Jan'24-Apr'24]
  (Advisor - Prof. Mansi kanetkar, IIT Gandhinagar) | *Project Link*
  - Developed a real-time Drowsiness Alert System (DAS) using pressure sensors integrated into the driver's seat to detect fatigue through changes in pressure distribution.
  - Designed and implemented a machine-learning algorithm to analyze pressure patterns and trigger customizable alerts (visual, auditory, or haptic) to ensure driver safety during long journeys.
- **Quadruped Robot Design [Group Project]** [Aug'23-Nov'23]
  (Advisor - Prof. Sameer Patel, IIT Gandhinagar) | *Project Link*
  - Coordinated with a 10-member team to design the leg of a quadruped robot using Autodesk Inventor.
  - Developed a 3D model incorporating articulated joints and hinges to facilitate smooth locomotion and robust performance in varied terrains.

TECHNICAL SKILLS

- **Python, C, C++, Java, MySQL, Verilog:**
- **MATLAB, Arduino IDE, Vivado, AutoDesk Inventor, AutoDesk Fusion:**

RELEVANT COURSES

- Electrical Machines, Signal System and Random Processes, Electronic devices, Digital Systems, Control Systems
- DSA, Ordinary Differential Equation, Partial Differential Equation, Calculus of Single Variable and Linear Algebra

ACHIEVEMENTS AND EXTRACURRICULAR ACTIVITIES

- Secured **2nd position** as a group of 4 students at the **Mechathon** event, Ahmedabad University, for designing an innovative mechanical system. ***[Certificate]***
- Awarded the **Explorer's Fellowship (2024)** to travel across India and gain experiential learning about diverse cultures, traditions, and lifestyles.
- Coordinated logistics for cultural programs, ensuring participation from over 300 attendees.

POSITIONS OF RESPONSIBILITY

- **Team Member | Mean Mechanics Club IITGN** [Dec'24 - Present]
  - Actively contributing to the design and development of a basketball-playing robot for Robocon'25. Collaborating with team members to research, design, and implement technical solutions to ensure efficient functionality and high performance during the competition.