Prajakta Virendra Bandgar

PRAJAKTA VIRENDRA BANDGAR

B.E. (Hons.) Electrical and Electronics Engineering | Expected 2027
CGPA: 7.41
Email: f20231033@goa.bits-pilani.ac.in | **Mobile:** 8408046667
LinkedIn: linkedin.com/in/prajakta-bandgar | **GitHub:** github.com/prajakta-bandgar

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SUBJECTS / ELECTIVES

Computer Programming, Machine Learning, Deep Learning, Digital Design, Microprocessors and Interfacing, Principles of Management, Signals and Systems, Microelectronic Circuits, Electronic Devices

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INTERNSHIPS

AI Research Intern, AI Gurukul | *May 2025 – Aug 2025*

- Benchmarked open-source LLMs like LLaMA for educational Q&A using retrieval-augmented generation (RAG) pipelines. Focused on identifying the most effective and cost-efficient models for chatbot applications by comparing them to Gemini-generated ground-truth responses.
- Used RAGAS and BLEU to evaluate response accuracy and latency, integrated LlamaIndex for document retrieval, and plotted detailed analysis graphs. Delivered a final technical report summarizing findings and recommendations.

Product Lead, FuturixAI | *Jan 2025 – Jul 2025*

- Drove product strategy and AI feature design with an emphasis on user experience and market differentiation. Prioritized features based on technical feasibility and market differentiation, enhancing competitive positioning.
- Collaborated across teams to define product direction, led analysis of competitors, and mapped out strategic decisions based on insights.

Data Analysis Intern, Indian Institute of Science Education and Research (IISER) | *Jun 2024 – Jul 2024*

- Analyzed solar CME datasets to uncover correlations between solar wind parameters and geomagnetic storm severity. Aimed to support future development of space weather prediction algorithms through statistical pattern discovery.
- Used Python (Pandas, NumPy, Matplotlib) for time-series analysis, preprocessed NASA data, and prepared technical findings for internal review.

Summer Intern, Sensesemi Technologies | *May 2024 – Jul 2024*

- Designed and trained 1D CNN and Time Series UNet models to estimate blood pressure from ECG and PPG signals. Engineered a lightweight Pulse Transit Time (PTT)–based algorithm for real-time, calibration-free BP prediction.

- Preprocessed physiological data, tuned model performance using MAE/RMSE metrics, and compiled findings into a technical report.

PROJECTS

Cardiac Sensor – Low-Cost Digital Stethoscope | *Embedded Systems, Signal Processing, Machine Learning*

Low-cost digital stethoscope that captures heart sounds (phonocardiogram) for automated classification of normal vs abnormal cardiac conditions.

Hardware: - ESP32-DevKitC-32E microcontroller - INMP441 I2S MEMS microphone - Modified stethoscope chest piece for acoustic coupling

Software/ML: - Heart sound classification using PhysioNet Challenge 2016 dataset - Signal processing for S1/S2 heart sound detection

Applications: Early screening for cardiac abnormalities, portable cardiac monitoring

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Image Edge Detection using Energy-Efficient Spintronics Devices | *Spintronics, Neuromorphic Computing*

Designed and implemented a novel image edge detection algorithm using Spin-Orbit Torque Magnetic Tunnel Junction (SOT-MTJ) devices for neuromorphic computing applications. Replaced computationally expensive adaptive thresholding with power-of-2 bit-logic operations requiring only 2 logic gates (AND + OR), enabling massively parallel hardware implementation. Evaluated on BSDS500, DRIVE (retinal imaging), and Brain Tumor MRI datasets, achieving up to +143% improvement over SAM2 baselines and +19.9% over Canny on natural images. Implemented energy consumption modeling based on SOT-MTJ device physics (LLGS simulations).

Embedded Avionics & Telemetry System for Rockets | *Avionics, Hardware Integration*

Built a functional avionics module using an Arduino Nano. Developed embedded C++ firmware for real-time telemetry, interfacing BMP180 (barometric), thermistor-based temperature sensors, and MPU6050 accelerometer via I2C, implementing a Kalman filter to smooth sensor noise and improve altitude and velocity estimation. Logged synchronized sensor data to an SD card module for post-flight analysis; designed the system for plug-and-play deployment in rocket payloads.

POSITION OF RESPONSIBILITY

Avionics Subsystem Lead, Project Rocketry | *Apr 2025 – Present*

Led a 10-member avionics team within a 25-member student rocketry project. Managed design and integration of flight computers, sensors, and telemetry. Coordinated with propulsion and structural teams to ensure system compatibility.

ACADEMIC DETAILS

COURSE	INSTITUTE/COLLEGE	BOARD/UNIVERSITY	SCORE	YEAR
B.E. (Hons.)	BITS Pilani, Goa Campus	BITS Pilani	7.41 CGPA	2023–2027
Class XII	Aditya English Medium School, Baner, Pune	CBSE	92.6%	2023
Class X	Indira National School, Tathawade, Pune	CBSE	92.2%	2021

LANGUAGES KNOWN

Hindi, Marathi, English