PARAMVEER SINGH MATHARU

Bina, Madhya Pradesh, India

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Education

- **VIT Bhopal University** *2022-2026*
  Bachelor's in Computer Science CGPA - 9.22
- **DAV BORL Public School, Bina** *2021-2022*
  12th Standard Percentage - 90.8%
- **Nirmal Jyoti Hr. Sec. School,Bina** *2019-2020*
  10th Standard Percentage - 86.8%

Skills

Coursework: Data Structures and Algorithms, Object-Oriented Programming, Operating System, Database Management Systems

Technologies/Frameworks/Libraries: Java, JavaScript, Python, HTML, CSS, React JS, MySQL, Machine Learning, Generative AI, LangChain, PyTorch, Git, Github, Figma

Projects

- **Real-Time EEG-Controlled Car Game via BCI**
  Brain–Computer Interface Development | Python, SVM, Arduino, Signal Processing
  - Engineered a real-time BCI using an Arduino (512Hz) to acquire EEG signals, implementing digital signal processing (notch/bandpass filters) and extracting 8 spectral features to translate mental activity into game commands.
  - Trained an SVM model to classify mental states (relaxed vs. attentive) with 82.91% accuracy, enabling low-latency, hands-free control of a car game through simulated keypresses (W, Space).
- **SoluDraw**
  React 19, TypeScript, FastAPI, Python, Gemini AI
  - Built an interactive math solver that lets users draw equations and receive real-time, AI-powered solutions using Google Gemini 1.5 Flash, supporting arithmetic, algebra, trigonometry, and diagram interpretation.
  - Designed a dynamic React + Canvas UI with drag-and-drop LaTeX rendering, multi-color tools, and a local history manager (100+ sessions), backed by 5 RESTful FastAPI endpoints for seamless AI integration.

Research Projects

- **EEG Signal Detection via CSNN**
  Spiking Neural Networks, EEG Signal Processing
  - Researched and implemented a Convolutional Spiking Neural Network (CSNN) architecture for classifying EEG-based stress states, achieving a state-of-the-art 98.61% accuracy and 98.60
  - Optimized the hybrid model (convolutional layers + spiking neurons) for energy efficiency and temporal dynamics, outperforming traditional CNNs, LSTMs, and SVM baselines. Implemented with 10-fold cross-validation, highlighting its potential for low-power, real-time neurodiagnostic systems.

Achievements

- Solved over 500+ problems across competitive programming platforms:
  LeetCode **CodeChef** **GeeksforGeeks**
- Secured **AIR 116** in the **India Space Lab Winter Internship Technical Training Program Examination** (2024–2025)

Certifications

- **NPTEL Privacy and Security in Online Social Media :** Scored in the top 1% nationwide, earning a Silver + Elite certificate.
- **Generative AI Using IBM WatsonX**
- **SmartBridge Fullstack Development (MERN) with MongoDB Developer certification**