PARAMVEER SINGH MATHARU

Bina, Madhya Pradesh, India

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EDUCATION

- **VIT Bhopal University** *2022-2026*
  Bachelor's in Computer Science CGPA - 9.27
- **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
  - Developed a real-time brain–computer interface (BCI) using Arduino (512Hz) to capture EEG signals and control a car game via simulated keypresses (W, Space) based on classified mental states (relaxed vs. attentive).
  - Processed EEG data with notch/bandpass filters, extracted 8 spectral features (e.g., alpha/beta energy), and trained an SVM (RBF kernel) with 5-fold GridSearchCV (F1-score: 82.91%, 1s latency), enabling accurate hands-free control for neurogaming and assistive applications.
- **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
  - Developed an end-to-end EEG signal detection system using a Convolutional Spiking Neural Network (CSNN) to identify anticipatory brain potentials with 98%+ accuracy, outperforming standard CNNs.
  - Achieved 95–97% sensitivity in detecting slow cortical potentials (SCPs) via 10-fold cross-validation using PyTorch/SNNTorch, optimizing spiking layers for reliable, real-time neural event classification.

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**