KUMARI AASTHA

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Skills

- **Java | Python | MATLAB| SIMULINK| VLSI Design| Embedded Systems**
- **OOP's| English, Hindi – All professional proficiency or above**

Certifications

- **VLSI Design – Maven Silicon:**
  Completed a comprehensive VLSI Design Internship Program offered by Maven Silicon in association with ACEIC. Worked on a hands-on project involving RISC-V ISA & RV321 RTL Design, gaining practical experience in hardware design and verification.
- **MongoDB Associate Database Administrator – FACE Prep:**
  Successfully completed a certification course on *MongoDB Associate Database Administration* conducted by FACE Prep.The course recognized outstanding performance and practical understanding of MongoDB essentials, administrative operations, and database design strategies.

Projects

Automatic Wheelchair Control System Using BCI **Jul'23**

Developed a smart wheelchair system using Brain-Computer Interface (BCI) to enhance mobility for individuals with disabilities.

- **BCI-Based Control:** Used EEG sensors to enable hands-free wheelchair movement.
- **Autonomous Navigation:** Integrated IR and ultrasonic sensors for obstacle detection.
- **Gesture & Voice Commands:** Designed intuitive interface for multiple input modes.
- **Machine Learning:** Applied ML to interpret neural signals accurately.
- **Hardware Integration:** Built using Arduino UNO, motors, and sensors for real-time control.

Interpretation and Processing of EEG Signals Using DSP Techniques **Dec'24**

Built a DSP-based framework to analyze EEG signals and enhance BCI applications for individuals with motor disabilities.

- **EEG Signal Processing:** Implemented DSP techniques to preprocess EEG signals, remove noise and artifacts, and extract meaningful features for brain activity analysis.
- **Advanced Filtering & Feature Extraction:** Applied band-pass filtering, Independent Component Analysis (ICA), and wavelet transforms for precise EEG data refinement.
- **Machine Learning for Brain Activity Interpretation:** Utilized time-domain, frequency-domain, and time-frequency analysis methods to classify brain states effectively.
- **BCI Optimization:** Improved signal clarity for seamless BCI applications, enhancing user control for assistive technologies.
- **Smart EEG Processing:** Built robust DSP models in MATLAB & Python for seamless real-world applications.
- **Future Scope & Research Contributions:** Demonstrated the effectiveness of DSP in EEG analysis, paving the way for enhanced brain-computer interaction and neurotechnology advancements.

Education

VIT Bhopal University **2022 - 2026 (expected)**

- BTech In Electronics and Communication Engineering| CGPA: **8.27**

Positions of Responsibility

National Symposium on Innovations in Intelligent Systems | Event Management **Jan'25 - Feb'25**

- **Supported ANRF-Sponsored National Symposium:** Contributed to the successful execution of a two-day event on "Innovations in Intelligent Systems" at VIT Bhopal. Assisted in event logistics, speaker coordination, and participant engagement, ensuring smooth operations and enhancing the attendee experience.