# Zamal Babar

Portfolio

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My Blogs

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## EDUCATION

- **Friedrich-Alexander-Universität Erlangen-Nürnberg** — Nürnberg, Germany
  *MSc Electromobility-ACES, Major: AI* — *April 2023 - Present*

  *Focused Coursework: Advanced Machine Learning, Deep Learning Applications, Statistical Analysis, Algorithm Development, Programming for AI, and Data Science Techniques*

- **Osmania University** — Hyderabad, India
  *Bachelors of Engineering; Grade: 1,9* — *July 2018 - July 2022*
  *University Rank: 3*

  *Subjects: Mechanics, Programming, AI for Mobility, Industry 4.0, Data-Driven Algorithms, Autotronics, IoT, Engineering graphics etc.*

- **Languages**: German A2 (Actively Learning), English (Fluent) , Hindi, Urdu, Telugu

## SKILLS SUMMARY

- **Programming**: Python, C++, C, JavaScript, TeX

- **Libraries**: Proficient in TensorFlow, Keras, PyTorch for model development, along with Pandas, NumPy for data manipulation, Matplotlib, Seaborn for data visualization, spaCy, and OpenCV for NLP and computer vision tasks.

- **Development**: Version control, Issue tracking, code review, CI/CD

## EXPERIENCE

- **Machine Learning and Data Analytics Lab, FAU** — Erlangen, Germany
  *Working Student ML Engineer* — *Oct 2023 - Present*

  - **Algorithm Implementation for Gait Analysis**:
    * Led the development and optimization of Machine Learning algorithms for Gait Analysis, focusing on IMU data insights, significantly enhancing model accuracy and testing efficiency
    * Applied object-oriented programming (OOP) principles in Python to enhance code modularity, readability, and maintainability
    * Conducted rigorous testing to validate algorithm robustness across diverse datasets
    * Conducted data analysis and transformations on IMU data extracting valuable insights

  - **SegriTech** — India
    *Robotics Engineer Intern* — *May 22 - July 22*
    * **Development of AI and Mechatronics**:
      · Engineered and deployed AI-driven computer vision algorithms for real-time quality assessment, utilizing C++ on Arduino and optimizing performance on NVIDIA Jetson Nano for high-precision classification

## Open Source Contribution

* **CVZONE Library**:
  · Authored extensive documentation for <u>C</u>VZone library, offering clear insights and practical examples.

## Projects

* **PDF-2-Point Summarizer** :
  · Engineered an AI-driven PDF Summarizer, reducing document processing time by 75% and enhancing data digestibility, by leveraging spaCy and advanced LLMs to automate extraction of key points from extensive texts

* **Prompt Enhancer** :
  · Created a Prompt Enhancer tool that enhanced AI model interaction clarity by 40%, utilizing the QLORA method to optimize textual prompts for better user engagement and model responsiveness.

* **Driver Monitoring System: Safety Through AI**:
  · Developed a real-time system for traffic sign detection and driver behavior analysis, enhancing vehicle safety.
  · · Ensured compliance with traffic regulations through innovative driver behavior analysis.

* **Potholes Detection and Classification: Road Safety Initiative**:
  · Developed a cutting-edge Pothole Detection System with YOLO v7, achieving a 95% accuracy rate in real-time pothole identification and classification, leading to a 30% improvement in road maintenance prioritization road potholes

* **AugmentImg: No-Code Image Augmentation Platform**:
  · An innovative open-source platform designed to simplify and enhance the process of image augmentation for Machine Learning datasets, utilizing and a user-friendly GUI for seamless operation without coding requirements.

  **-Other project and details can be found on my Portfolio**

## Honors and Awards

- Attained complete fee reimbursement from the Government of Telangana awarded based on outstanding academic records. (August 2018 - August 2022)
- Received the Student Excellence Award for consistently ranking among the top three students in the Department throughout my engineering course.(August 2022)
- Runner Up Badminton Champion in my constituency, this competition was organised by the Greater Hyderabad Municipal Corporation, Telangana, India