

# Manpa Barman

+49 17685927926

✉ [manpa.barman97@gmail.com](mailto:manpa.barman97@gmail.com)

in [linkedin.com/in/manpabarman](https://www.linkedin.com/in/manpabarman)

github.com/ReboreExplore

## EDUCATION

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- **Universität Stuttgart** Stuttgart, DE  
*M.Sc in INFOTECH; Grade: 1.9* *Started Oct 2022 – Present*
  - **Relevant Coursework:** Deep Learning, Machine Learning, Computer Architecture and Organization, Operating Systems, GPU Programming, Signals and Systems, Embedded Systems
  - **Certificate of Advanced Studies:** Advanced AI Certification with the Artificial Intelligence Software Academy, University of Stuttgart
- **Assam Engineering College** Guwahati, IN  
*Bachelor of Engineering in Instrumentation; Thesis Grade: 1.3* *Aug. 2016 – November. 2020*
  - **Relevant Coursework:** Linear algebra, Probability and Statistics, Optimization, Digital System Design, Data structures and Algorithms, Embedded Systems, Digital Image Processing
  - **Bachelor Thesis - Image Processing Based Object Tracking Turret:** Built a servo-motor controlled object tracking turret using Raspberry Pi 4B and NVIDIA Jetson Nano board. The device can detect and track objects using a MobileNet model. The motion of the tracking turret was controlled using a PID controller.

## WORK EXPERIENCE

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- **Zeiss Group** Oberkochen, DE  
*Research Intern* *Oct 2024 – Apr 2024*
  - **Overview:** Worked in the Corporate Research and Technology Department at ZEISS under David Dobbelsstein and Daniel Werdehausen. Focused on integrating interactive modalities for microscope control and analysis, and exploring the limitations of vision-language models (VLMs) in the microscopic domain.
  - **Work Undertaken:** Developed software using the .NET framework to integrate multimodal interfaces for hands-free microscopy control. Conducted an extended study on multimodal foundational models and their limitations within the specialized context of microscopic imaging.
- **DSSGx Fellow 2024, Ludwig Maximilian University of Munich** Munich, DE  
*Research Fellow* *Aug 2024 – Sep 2024*
  - **Overview:** Selected as one of ten fellows in 2024 to develop AI and software solutions for social good. Collaborated with Nationalparkverwaltung Bayerischer Wald to address overcrowding by building a data management and visitor traffic prediction framework, enabling more efficient resource allocation.
- **Perceptual User Interfaces Group, Universität Stuttgart** Stuttgart, DE  
*Research Project* *Nov 2023 – May 2024*
  - **Overview:** Worked under Prof. Andreas Bulling and Mayar Alfares to analyze and evaluate the abilities of the open source large language models on cryptographic abilities.
  - **Work Undertaken:** Developed an LLM-based opensource cryptodataset - CryptoQA dataset which was instruction finetuned on foundational models to obtain the CryptoLLM series of models. Extensive *qualitative* analysis was done on the CryptoLLM models and its impact using various prompt engineering techniques and language chaining.
- **Human Computer Interaction and Cognitive Science Department (HCICS)** Stuttgart, DE  
*Wissenschaftliche Hilfskraft* *April 2023 – Present*
  - **LSLAutoBIDS:** Lead the development of the open-source Python package LSLAutoBIDS, which is an automation pipeline to help cognitive science researchers analyze and unpack the electroencephalogram data in the BIDS format. This work is supervised by Prof. Benedikt Ehinger.
  - **FreeViewing EEG-eye-tracking experiment:** Worked under Judith Schepers for the development and organization of a free viewing EEG-eyetracking experiment. Actively worked in the experiment design in python and opensesame leveraging the use of EyeLink 1000 Plus eye tracker.
  - **PrivatEyes-V2:** Currently working under Mayar Alfares to conduct an eye-tracking-based user study to analyze the perception of an individual towards private and safe images. The results obtained will eventually be used to develop a deep learning-based AI-security model.

## PUBLICATIONS

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- **Object Detection and Tracking turret based on Cascade Classifiers and Single Shot Detectors:**  
P. Gogoi, M. Barman, M. Deka, U. Rajkonwar, R. Moudgollya  
2020 International Conference on Computational Performance Evaluation (ComPE)  
*NEHU, Shillong, India / 2-4 July 2020*
- **Deep learning based flood mapping: A Case Study from a flood-vulnerable state in the Northeastern region of India:**  
M. Barman, P. Gogoi, S. Goswami, H. Nagendra  
American Geophysical Union (AGU) Fall Meeting 2022  
*Chicago, USA / 12 - 16 Dec 2022*

## PROJECTS

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- **CHATtacker: Role Playing in Large Language Models:** Created and analyzed the effects of role-playing in the Large Language Model (LLM) and explored offensive and defensive measures for the SOTA LLMs.
- **Visual World Paradigm:** Study on how humans predict upcoming words and how phonetical and semantical similarities affect the next word prediction. The study was done with data collected from the Gazepoint eye tracker and the behavior of the participants was analyzed.
- **GPU Implementation of JPEG Encoder:** Implemented a simple JPEG encoder using OpenCL framework and analyzed the speedups in GPU implementations.
- **Research Paper implementations:** Implementation of the state-of-the-art deep learning research papers using Tensorflow and Pytorch Frameworks. The repository consists of popular Computer Vision and Generative Adversarial Network papers.

## ACHIEVEMENTS

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- **DSSGx Fellow:** Selected as one of the 8 fellows in the prestigious Data Science for Social Good Program for the year 2024, hosted by Ludwig Maximilians Universität München.
- **Winter Overseas Fellowship Program:** Merit scholarship awarded by the Government of India for a summer research visit at the University of Warwick in 2020.

## TECHNICAL SKILLS

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**Languages:** Python, C, C++, VHDL, Assembly, C#

**Technologies:** TensorFlow, PyTorch, Linux, Git, OpenCL, Opensesame, Google Earth Engine, Hugging Face, MLOps, LangChain, Neo4j, Docker, AWS

**Soft Skills:** Teamwork, Adaptability, Communication, Technical Writing

## LANGUAGES

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**English and Hindi:** Working Professional Fluency

**German:** Elementary Fluency

**Assamese:** Native Fluency

## HOBBIES

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Vocalist, Hiking, Blogging, Playing musical instruments (Keyboard, Ukulele)