

Pritom Gogoi

<http://rusty-electron.github.io>

 *Pritom Gogoi*  *Youtube Channel*

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github: <https://github.com/rusty-electron>

RESEARCH EXPERIENCE

- **Bosch Center for Artificial Intelligence** Rennigen, DE
Master Thesis Student *Jul 2025 - Jan 2026*
 - **Overview:** Proposed a Low-Rank and Diagonal (LRD) covariance model for probabilistic online map generation in autonomous driving. Integrated uncertainty into downstream trajectory prediction via novel encoding schemes and confidence score-based feature modulation, leading to SOTA results on the nuScenes dataset.
- **Collaborative Artificial Intelligence** Stuttgart, DE
Wissenschaftliche Hilfskraft *Oct 2025 - Jan 2026*
 - **Overview:** Worked under Fabian Kögel (supervised by Dr. Andreas Bulling) on extending MTEX, an explainability framework, by implementing input-attribution methods for multimodal transformer models like ViLT. I integrated new methods like AttnLRP, integrated gradients and input X gradients into the framework and ran perturbation experiments.
- **Korro AI** Darmstadt, DE
AICV Intern *Sept 2024 - March 2025*
 - **Overview:** Extended an in-house human pose estimation framework to predict relative depth values for pose joints. Additionally, I developed a pipeline to enrich human pose datasets with depth annotations by leveraging DepthAnythingV2, a monocular depth estimation model.
- **MORESOPHY GmbH** München, DE
Working Student *Apr 2024 - June 2024*
 - **Overview:** Developed predictive ML models to forecast client contact frequency and timing using rich dataset with 50+ attributes. Emphasized explainable predictions to reveal key features influencing outcomes, aiming for impactful business insights.
- **SimTech Group for Dynamical Systems** Stuttgart, DE
Wissenschaftliche Hilfskraft *May 2023 - Sept 2024*
 - **Bayesflow:** Worked under Marvin Schmitt to support the development of the open-source package *Bayesflow* that enables efficient Bayesian inference with deep learning.
 - **ARTSM:** Worked under Christian Pfaendner for development of a open-source python package for backmapping of coarse-grained molecular structures into atomistic resolution using machine learning techniques.
- **Human Computer Interaction and Cognitive Systems Lab** Stuttgart, DE
Wissenschaftliche Hilfskraft *May 2023 - Nov 2023*
 - **Overview:** Worked under Dr. Mihai Băce on the developement of a deep learning pipeline for generation of human eye images using Image-to-Image translation techniques. Used models like GroundingDINO for object detection and segment-anything (SAM) for semantic segmentation.
- **Indian Institute of Technology, Guwahati** Guwahati, IN
Research Assistant *Oct 2020 - June 2022*
 - **Overview:** Built open-source implementation of hand pose estimation models like Attention-based 2D Hand Pose Estimation model by Santavas et. al. and the Convolutional Pose Machines paper by Wei et. al. Both implementations used the Tensorflow framework.

PUBLICATIONS

- **Uncertainty Matters: Structured Probabilistic Online Mapping for Motion Prediction in Autonomous Driving:**
P. Gogoi, F. Janjoš, B. Yang and A. Look
arXiv:2603.20076, (planned for ICRA 2027)
- **An UAV Assisted Multi-sensor based Smart Parking system:**
P. Gogoi, J. Dutta, R. Matam, M. Mukherjee
IEEE International Conference on Computer Communications (INFOCOM)
Ottawa, Canada | 6-9 July 2020
- **ART-SM: Boosting Fragment-Based Backmapping by Machine Learning:**
C. Pfaendner, V. Korn, P. Gogoi, B. Unger and K. Pluhackova
Journal of Chemical Theory and Computation (2025)

EDUCATION

- **Universität Stuttgart** Stuttgart, DE
M.Sc in INFOTECH; Grade: 1,5 *Started Oct 2022 – Present*
 - **Master's Thesis:** Uncertainty-Aware Map Generation for Motion Prediction in Autonomous Driving (described prior)
 - **Relevant Coursework:** Deep Learning, Machine Learning, Matrix Computations in Signal Processing, Computer Architecture and Organization, Operating Systems, GPU Programming, Signals and Systems
 - **Research Project - Diffusion based Gaze Estimation Model:** Developed a gaze estimation (from a distance) model that used conditional score-based diffusion to model the temporal coordination between gaze, head and body orientations.
- **Assam Engineering College** Guwahati, IN
Bachelor of Engineering in Instrumentation; Percentage: 84.13 *Aug. 2016 – July. 2020*
 - **Relevant Coursework:** Multivariate Calculus, Linear Algebra, Probability and Statistics, Digital System Design, Data structures and Algorithms, Embedded Systems Development, Digital Image Processing
 - **Bachelor Thesis - Image Processing Based Object Tracking Turret:** Built a servo turret prototype controlled by the Raspberry Pi 4 board that can detect and track COCO objects using a MobileNet model. The motion of the tracking turret was controlled using a PID controller.

PROJECTS

- **GPU Implementation of JPEG Encoder in C++:** Developed a GPU-accelerated JPEG encoder in C++, enhancing image encoding and decoding capabilities by leveraging NVIDIA CUDA for high-performance parallel processing. [\[github\]](#)
- **Visual World Study using Gazepoint Eyetracker:** Leveraged the Gazepoint GP3 eyetracker for precise gaze pattern analysis in order to study the cognitive mechanisms underlying real-time language comprehension. [\[github\]](#)
- **16-bit General Purpose Computer:** Designed a simple 16-bit CPU with a custom instruction set based on the self-taught course curriculum of `nand2tetris`. I also wrote a python assembler for its instruction set.
- **Open Source Implementations of Research Papers:** Implemented various papers from the domain of Computer Vision and Deep Learning viz. CGAN, Neural Style Transfer, Convolutional Pose Machines, etc. They can be found on [github](#).

COMPETITIONS

- **Plant Pathology 2021 - FGVC8 | Kaggle:**
 - We completed in the **top 10%** among 626 participating teams. The main objective of the competition was to develop machine learning-based models to accurately classify a given leaf image from the test dataset to a particular disease category, and to identify an individual disease from multiple disease symptoms on a single leaf image.

INTERESTS AND TECHNICAL SKILLS

- **Languages:** Python, C++, C, Matlab/Octave, Assembly, Bash, VHDL
- **Familiar Tools and Frameworks:** Linux, Pytorch, Tensorflow, Git, Agentic Coding, Numpy, OpenCV, OpenCL, $\text{\LaTeX}$, huggingface 🤗, FastAPI, MLOps, GIMP, vim, Docker, Elasticsearch/Opensearch, mmpose, openmmlab, Rerun

INTERESTS AND SOFT SKILLS

- **Soft skills:** Adaptability, Communication, Problem solving, Creativity, Teamwork
- **Hobbies:** Boulderling, Hiking, Long-distance Running, Biking, Chess, Video games
- **Languages:**
 - English and Hindi - Working Professional Proficiency
 - German - Elementary Proficiency
 - Assamese - Native Proficiency