Tanmoy Das

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 Github, LinkedIn, Portfolio

👤 Profile

Passionate Computer Vision and Machine Learning Enthusiast

Motivated computer vision and data science professional with a strong foundation in mathematics and computer science. Experienced in developing and optimizing deep learning models for tasks including medical imaging, natural language processing, and generative modeling. Skilled in data-driven problem solving, statistical analysis, and machine learning pipelines. Eager to apply innovative solutions to real-world challenges in visual understanding, pattern recognition, and data analytics within industry settings.

💼 Experience

Karta Inovations   **Hyderabad, India**

Individual Contractor (Remote) as Computer Vision Engineer   November 2025 – Present

- Developed and improving an AI-driven drone geo-localisation system for GPS-denied environments, combining visual perception and large language model–based reasoning to support reliable aerial navigation and situational awareness.
- Designed and improving a scalable visual search and ranking pipeline to match drone-captured imagery against large satellite map datasets, focusing on robustness to viewpoint changes and reduction of false positives.
- Integrated multimodal cues from aerial imagery with LLM-assisted reasoning to refine location hypotheses, demonstrating the ability to connect low-level perception with high-level contextual understanding.
- Built a modular, deployment-oriented architecture separating offline data preparation from real-time drone inference, enabling efficient experimentation, debugging, and future system expansion.

RegHub   **Hamburg, Germany**

Internship| Advisor: Mr. Gerrit Knippschild   November 2025 – Present

- Built a model-agnostic inference-time control plane for LLMs, enabling dynamic persona and policy enforcement via the Model Context Protocol (MCP) without model fine-tuning.
- Implemented a session-aware context injection pipeline using HTTP and Server-Sent Events (SSE) to reliably influence LLM behavior across ChatGPT and Claude clients.
- Engineered a cross-transport MCP bridge (stdio ↔ HTTP ↔ SSE) to integrate desktop and cloud LLM clients, handling protocol negotiation, streaming, and fault tolerance.

Procter & Gamble   **Schwalbach, Hessen, Germany**

Internship (R&D)| Advisor: Dr. Behzad Mohebbi and Mr. Adrien Grenier   April 2023 – September 2024

- Did my Master's Thesis on 3D UNet, its variations, and 3D volume Generation of CT images using Diffusion and Generative models such as Generative Adversarial Net works (GANs) and Variational Auto Encoder(VAE).
- Implemented and optimized the Attention Mechanism in the UNet architecture to enhance model performance in Porous media.
- Improved the IoU Score by 33.3% from the initial model.
- Developed and deployed a custom Large Language Model (LLM) using Retrieval-Augmented Generation (RAG) techniques, integrated with Streamlit for user-friendly in teraction and efficient deployment.
- Worked closely with various departments to streamline workflows and enhance interdepartmental coordination.

Phenorob   **Bonn, NRW, Germany**

Student Assistance| Advisors: Mr.Ahmed Emam and Dr. Prof. Ribana Roscher   October 2022 – March 2023

- Developed and implemented deep learning models for the classification of honey bees and bumblebees, utilizing advanced neural network architectures to achieve high accuracy in species identification.
- Efficiently prepared and managed datasets for Bumble Bees vs Honey Bees vs other insects in a deep learning model development, ensuring data integrity and optimizing the workflow for more accurate results.
- Processed satellite images and also found the saliency maps of the image but passed the images into a self-built U-net.
- Assisted PhD students with navigating academic procedures and administrative processes.

🎓 Education

Rhenish Friedrich Wilhelm University of Bonn   **Bonn, Germany**

MSc, Computer Science, Major: Computer Vision and Artificial Intelligence   April,2021 – April,2025

Master's Thesis: **3D nonwoven Structure Segmentation and Generation**   Thesis Grade: **1.6/4**

Thesis Guide: Dr. Behzad Mohebbi and Dr. Prof. Thomas Schultz

SRM Institute of Science and Technology   **Chennai, India**

B.Tech, Computer Science. Grade: **7.42/10**   July,2016 – June,2020

Nalanda Academy   **Rajasthan, India**

Higher Seconday in Science, Grade: **80.4%**   April,2016

Major: Physics, Chemistry, Mathematics

‹/› Personal Projects

Tree Of Thoughts RAG using LLM

- Architected a production-style RAG system over a private knowledge base, integrating query rewriting, semantic retrieval, and transparent source attribution to deliver grounded, auditable answers through a modern chat interface.
- Implemented a Tree-of-Thought reasoning pipeline with exploration–exploitation control, combined with a Cite-or-Drop verification agent that enforces evidence-backed outputs by pruning unsupported reasoning paths and claims, improving reliability on complex, multi-step queries.link

Depth Estimation from Thermal Images

- Developed a deep learning framework for monocular depth estimation using thermal images by adapting the transformer-based DUST3R model.
- Designed a novel dual-branch encoder-decoder architecture to independently process and extract features from thermal image inputs.link

Implementation of CycleGAN from scratch.

- Implemented a CycleGAN in PyTorch for unpaired image-to-image translation between summer and winter domains, following the official paper's methodology.
- Used different Loss functions to understand their effect. link

English to German translator from scratch.

- Developed an English-to-German neural machine translation model using a sequence-to-sequence architecture with attention mechanisms, implemented from scratch in PyTorch.
- Integrated essential NLP preprocessing techniques, including tokenization and vocabulary construction, to prepare the dataset for effective model training.
- Trained the model on a curated English-German dataset, achieving accurate translations and demonstrating the effectiveness of attention-based architectures in language translation tasks. link

🎁 Skills & Interests

Programming Skills: Python, C++, LATEX, Javascript
Techniques: Reinforcement Learning, Statistical Modeling, Deep Learning, Machine Learning, Computer Vision, Software Development, System Integration, RAG, Creating Agents for LLMs(MCP), Model (Quantization, pruning, distillation)
Frameworks: Pytorch, JAX, OpenCV, Scikit-Learn, Docker, Git, Langchain, PyTorch Lightning, FastAPI, Fastmcp, WandB, mlflow, Streamlit, Flask
Languages: English (Professional), Hindi (Native), German (Elementary)
Personality: Leadership, teamwork, critical thinking, dependability
Hobbies: Playing Piano, Gym, Cooking, competitive gaming (Dota)

◎ Accomplishments

- Placed 4th in Code Enigma, a competitive coding contest at my university during my bachelor's
- Awarded the PyTorch Scholarship Challenge from Facebook(Phase 1)
- Placed 4th at Ctrl+Alt+Del Hackathon, a university-level competition
- Achieved 2nd position in regional exhibition and qualified for the national-level competition

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✿ Certifications

- Udacity Nanodegree in Deep Learning.link
- Machine Learning from Stanford University by Coursera.link
- Cloud Computing by NPTEL.link
- C++ by NPTEL.link

Reference : Dr. Behzad Mohebbi (mohebbi.b@pg.com), Mr. Adrien Grenier (adrien.grenier134@gmail.com)
Mr. Gerrit Knippschild (gerrit.knippschild@reghub.de)