

TANISH

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Summary

Computer Vision and Deep Learning researcher with expertise in object detection, medical image analysis, and scene understanding. Proficient in C/C++ and Python, with hands-on experience developing end-to-end AI pipelines for out-of-distribution (OOD) detection, oriented object detection, 3D medical image segmentation, and cell classification. Co-authored research publications in leading IEEE and Springer venues.

Technical Skills

Languages: C/C++, Python, SQL

Deep Learning Frameworks: PyTorch, TensorFlow, Scikit-learn, ONNX

Computer Vision & Imaging: OpenCV, Pillow, nibabel, openslide, SimpleITK, scipy

Dev Tools & Data: Git, Docker, CI/CD, Linux, NumPy, pandas, LangChain

Experience

Samsung R&D Institute India – Bangalore

Developer Intern

Jan 2026 – Present

Bengaluru, India

- Built a zero-shot, CLIP-based out-of-distribution (OOD) detection pipeline for live screenshot images, applying image processing and vision-language techniques to guide Samsung Screen AI data curation.
- Extracted OCR from screenshot images, modeled text semantics with language models, and fused OCR-language and vision-language scores into a unified OOD score.
- Improved computational efficiency through statistical patch/region selection, feature sparsification, and local-global image feature aggregation for real-time image analysis.

PRISM Research Group, NIT Rourkela

PG Researcher under Dr. Sobhan Kanti Dhara

Jan 2025 – Jan 2026

Rourkela, India

- Primarily conducted research on aerial image object detection in optical satellite imagery under complex conditions.
- Worked as a support researcher on tiny object detection and thermal-aerial detection tasks in multimodal settings.
- Authored and architected GeoStatNet (IEEE SPACE 2026) and GFCR-Net (IEEE GRSL, under review), and coauthored SAPNet, TSRNet, and From Pixel to People.

Upwork

Freelance Deep Learning Engineer

Nov 2023 – Feb 2024

Remote

- Built ML pipelines for gigapixel whole-slide images (SVS, $\sim 80\text{K} - 100\text{K} \times 80\text{K} - 100\text{K}$ pixels) using Multiple Instance Learning with ResNet features and attention pooling for tumor classification.
- Developed a cell-level mutation detection pipeline using segmentation masks to identify mutated cells in pathology imagery.

Malaviya National Institute of Technology Jaipur (MNIT)

Computer Vision Intern

Jun 2023 – Jul 2023

Jaipur, India

- Built a proof-of-concept web application for live PCB defect detection using a deployed YOLOv7 image processing pipeline, image uploads, and real-time model inference.
- Added an interactive canvas for labeling missed defects, enabling faster feedback collection and dataset updates.

Education

National Institute of Technology, Rourkela

M.Tech in Signal and Image Processing | GPA: 9.7

Aug 2024 – Present

Rourkela, India

Assam University, Silchar

B.Tech in Electronics and Communications Engineering | GPA: 8.2

Aug 2020 – May 2024

Silchar, India

Academic Research Projects

Object Detection in Optical Aerial Images | *Object Detection*

Jan 2025 – Present

- Researched robust image processing and object detection in complex scenes using oriented bounding boxes for small ships under fog, sea clutter, and occlusion in satellite images.
- Designed multiple lightweight, computationally efficient architectures with frequency isolation, contextual reasoning, and efficient feature fusion to reduce processing cost.
- Evaluated on the SCCOS, FGSRCs, and HRSC2016 dataset using AP and Recall, improving robustness against the latest CVPR, AAI, and IEEE TGRS baselines.

Liver and Tumor Segmentation in CT Scans | *3D Image Segmentation* | GitHub

May 2023 – May 2024

- Researched liver and tumor segmentation from abdominal CT scan volumes stored in NIfTI (.nii/.nii.gz) format.
- Developed a 3D-UNet-like segmentation model and tested on the LiTS 2017 dataset for volumetric liver/tumor analysis.
- Integrated 3D feature pooling and attention for multi-scale volumetric features, achieving Dice scores of 0.92 (liver) and 0.70 (tumor) over U-Net, V-Net, and MA-Net baselines.

Projects

C Android Camera ISP | *C/C++, Android, Camera Image Signal Processing (ISP)* | GitHub

2024

- Built a C/C++-based Android camera Image Signal Processing (ISP) project focused on low-level camera-frame processing and real-time imaging workflows.
- Implemented modular image-processing components for raw camera data, emphasizing efficient computation, debugging, and mobile/embedded imaging constraints.

Conversational Fashion GenAI | *LLMs, LangChain, Agentic AI, Web Scraping* | GitHub

2023

- Built an agentic fashion chatbot using LangChain and LLM agents for context-aware, trend-aware product recommendations.
- Scraped e-commerce websites and social media data to populate a trend-rated recommendation database; submitted as a Flipkart Grid 5.0 team solution.

Publications

Tanish, Jain, V., and Dhara, S. K. (2026). “GeoStatNet: Geometric-Statistical Feature Fusion for Robust Ship Detection in Degraded Maritime Environments.” *IEEE SPACE 2026* (Accepted).

Tanish, Jain, V., and Dhara, S. K. (2026). “GFCR-Net: Gradient-Guided and Frequency-Gated Context Refinement for Robust Ship Detection in Complex Optical Remote Sensing Images.” *IEEE Geoscience and Remote Sensing Letters* (Under major revisions).

Jain, V., **Tanish**, and Dhara, S. K.. “TSRNet: A Lightweight Thermal Saliency Refinement Network for Tiny Human Detection.” *National Conference on Communications (NCC), IEEE, pp. 472-477, 2026*.

Jain, V., **Tanish**, and Dhara, S. K. (2026). ”SAPNet: A Lightweight and Efficient Saliency-Aware Path Network for Tiny Human Detection in Thermal Aerial Imagery.” *IEEE SPACE* (Accepted).

Rabidas, R., **Tanish**, Kumar, S., Mandia, S., and Roy, A. “3D Feature Pooling Module and Attention Mechanism for Liver and Tumor Segmentation.” *International Conference on Computer Vision and Image Processing (CVIP)*, Springer, pp. 457–468, 2024.

Certifications & Achievements

Awards: IEEE SPACE 2026 Best Paper Award for SAPNet; M.Tech Initiative Delegate; Flipkart Grid 5.0 Finalist (2023); Smart India Hackathon Grand Finalist (2022).

Deep Learning Specialization (Coursera, 2023): Neural Networks and Deep Learning; Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization; Structuring Machine Learning Projects; Convolutional Neural Networks; Sequence Models. Certificates; IBM Data Science Certification (Coursera, 2023).