MUQSIT ISLAM

3D Vision | Visual SLAM | Perception Systems

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Graduate researcher in 3D vision and visual SLAM, with experience carrying perception systems from research prototype through to unattended deployment in remote environments. Currently pursuing an Erasmus Mundus Joint Master's in Image Processing and Computer Vision with academic honors. Available for a 6-month research internship from February 2027.

PUBLICATIONS

SceneVGGT: VGGT-based Online 3D Semantic SLAM for Indoor Scene Understanding and Navigation
A. Gelencsér-Horváth, G. Dinya, D. B. Erős, P. Halász, Islam Muhammad Muqsit, K. Karacs
Accepted at IEEE International Conference on Image Processing — ICIP 2026

Frozen Site-Probe Accuracy Is Not a Standalone Harmonization Score: An Audit of Evaluation Practice for Multi-Site MRI
Muhammad Muqsit Islam, Gloria García Cuenco, José M. Martínez Sánchez, Pierrick Coupé
Submitted at IEEE International Symposium on Biomedical Imaging — ISBI 2027

PROJECTS

Selected research projects in 3D vision, visual SLAM, and deployable perception systems.

SceneVGGT: VGGT-based Online 3D Semantic SLAM for Indoor Scene Understanding and Navigation

- Implemented components of a sliding-window SLAM pipeline built on VGGT feed-forward visual geometry, aligning local submaps by camera-pose transformation to hold geometric consistency over long sequences at bounded memory cost.
- Lifted semantic information from 2D instance masks to 3D objects using VGGT tracking, preserving temporal object identity for change detection, and mapped object positions onto an estimated floor plane for assistive navigation.
- Benchmarked against state-of-the-art methods on ScanNet++ under a GPU memory budget held below 17 GB regardless of sequence length; contributed result analysis and manuscript revision for the accepted ICIP 2026 paper.

Aspect-Preserving ViT-L Embeddings for Urban Elements Re-Identification
Urban Elements ReID Challenge, Submitted in ICIP 2026 Challenge Track

- Developed a ViT-L-based urban object re-identification system using aspect-preserving image resizing, mixed-domain training, and strong augmentation strategies.
- Investigated semantic supervision, class-aware retrieval, DINOv2/CLIP-assisted reranking, feature fusion, and class-specialized inference strategies.
- Improved public leaderboard mAP by ~5% relative (0.126 → 0.133) through representation-learning and input-geometry-preservation improvements showing that robust embeddings and aspect-ratio preservation contributed more than semantic reranking or retrieval-stage heuristics.

Applied Conservation Vision Systems: Wildlife Monitoring and Forest Fire Detection
Project links: Wildlife Monitoring | Forest Fire Detection

- Worked on two separate WWF-supported computer vision platforms: wildlife detection/species classification from camera-trap imagery and early forest-fire detection from remote camera feeds.
- Fine-tuned and evaluated MegaDetector, YOLO-family detectors, TinyYOLO, and CLIP on real-world ecological datasets from remote forest environments, improving species-level recognition and reducing false positives from environmental motion.
- Integrated model inference, visualization, and backend monitoring components into deployed systems for long-term ecological monitoring and distributed forest-fire detection.
- Forest-fire detection project recognized at the 2024 Asia-Pacific Triple E Awards.

HarmonIt: Brain MRI Harmonization for Multi-Site Imaging
Supervised by Dr. Pierrick Coupé (CNRS, LaBRI) and Dr. José María Martínez (UAM)

- Led an audit of how multi-site MRI harmonization is evaluated, on 1,112 raw brain MRI scans from 17 sites and seven methods (GAN, diffusion, statistical).
- Showed that a widely used metric can mislead: site classifiers trained with the benchmark's recipe disagreed by up to 0.46 balanced accuracy on the same outputs, classifiers retrained on harmonized images still recovered the site (0.87–0.91 for all three methods tested), and the best score went to the most destructive output.

WORK EXPERIENCE

Afiniti Inc *Sep 2024 – Aug 2025*
Data Scientist
- Developed probabilistic and Bayesian models for real-time decision systems using logistic models and MCMC methods.
- Built and maintained production ML pipelines, performing diagnostics and retraining to improve model performance for large scale telecommunication companies.

Computer Vision & Graphics Lab @ LUMS *Jun 2022 – Aug 2024*
Research Assistant to Dr. Murtaza Taj
Profile: cvlab.lums.edu.pk/muqsit-islam/
- Built and deployed computer vision systems for wildlife monitoring and forest-fire detection in collaboration with conservation partners (WWF).
- Conducted field validation experiments in challenging terrains (Gilgit-Baltistan, Khyber, Mansehra), bridging lab research with real-world conditions.
- Led end-to-end system development, including data ingestion, model inference, visualization and performance monitoring.
- Collaborated with multidisciplinary teams to translate research prototypes into deployable perception systems.

SoftCreed Co. *Mar 2021 – Jun 2022*
Web Scraping and Automation Engineer
- Built scalable data extraction pipelines using Scrapy and Selenium for dynamic websites.
- Delivered high-quality datasets for international clients through robust automation workflows.

EDUCATION

Erasmus Mundus Joint Master's in Image Processing and Computer Vision *Sep 2025 – Jun 2027*
- Université de Bordeaux *Sep 2026 – Jan 2027*
- Universidad Autónoma de Madrid *Jan 2026 – Jun 2026*
  8.66 / 10.00
- Pázmány Péter Catholic University *Sep 2025 – Jan 2026*
  Academic honors | 4.94 / 5.00

University of Management and Technology *Sep 2020 – Jul 2024*
BS in Computer Science (CGPA: 3.86 / 4.00)
Silver Medalist | Dean's Award (2×) | Rector's Award | Star Peer Tutor | Teaching Assistant, Deep Learning

SKILLS

3D Vision & Robotic Perception: Visual SLAM, camera pose estimation, 3D reconstruction, submap alignment, multi-object tracking, semantic scene understanding

Computer Vision & Deep Learning: PyTorch, TensorFlow/Keras, OpenCV, Open3D, YOLO-family models, MegaDetector, CLIP, Vision Transformers

Programming: Python, C++, MATLAB, R, JavaScript

Data & Scientific Computing: NumPy, Pandas, Matplotlib, scikit-learn, MLflow

Software & Systems: Linux, Docker, Git, REST APIs, SQL/NoSQL, Nginx, FastAPI, Flask, Django, React.js, Selenium, Scrapy

Medical Imaging & Harmonization: Brain MRI analysis, multi-site harmonization, domain adaptation

LANGUAGES

English (C2), French (B1), Spanish (A1), Urdu (C2)