AHTASHAM ILYAS

Computer Vision Engineer · Machine Learning Researcher

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RESEARCH PROFILE

MSc AI researcher and computer vision engineer specialising in real-time 6D pose estimation, instance segmentation, RGB-D scene understanding, and geometrical deep learning. Experienced with full perception stacks from sensor to structured representation. Interested in applying deep learning to the geometry and motion problems of visual effects and animation—tracking, reconstruction, and neural rendering.

EXPERIENCE

Computer Vision Engineer (Werkstudent) · AICOR Oct 2025–Present

Institute for AI (IAI) — University of Bremen *Bremen, Germany*

- Designing real-time CV algorithms for multi-object detection, instance segmentation, and 6D pose estimation from RGB-only input as part of the FAME project, focused on cognitive action modelling for robotics.
- Applying geometrical deep learning, including graph neural networks and manifold representations, to encode structured scene graphs bridging visual perception with physics-based mental simulation.
- Building scene-understanding pipelines that connect object-level visual perception to downstream cognitive reasoning and action-planning modules.

Python & Data Specialist Jun–Dec 2024

CandidateSide Recruiting(US) *Mirpur AJK, Pakistan (Onsite)*

- Implemented automated job-matching algorithms using ensemble ML models and NLP-based candidate profiling.
- Built Selenium web-scraping pipelines with GPT-powered data filtering; developed a JavaScript browser extension reducing form-fill time by 60%.

Full-Stack Developer Nov 2023–Jun 2024

Prime Missions (UK) *Remote*

- Delivered RESTful APIs and data-driven web applications deployed on AWS, Azure, and GCP with Docker containerisation.
- Implemented CI/CD pipelines with Jenkins, CircleCI, and Ansible for production-grade reliability.

EDUCATION

M.Sc. Artificial Intelligence & Intelligent Systems Oct 2024–Present

University of Bremen *Bremen, Germany · Grade: 1.7 (Top of cohort)*

- Major: Machine Learning and Cognitive Systems (MLCS). Key courses: Advanced ML, Reinforcement Learning, Computer Vision, and AI Algorithms.
- Master Project (24 ECTS) — ACRAMbly: Developed a ROS2 Jazzy node integrating FoundationPose (model-free 6D pose tracking) and GroundedSAM (open-vocabulary instance segmentation) for real-time pose estimation from Intel RealSense RGB-D streams. Supervised by Prof. Dr. Michael Beetz.

B.Sc. Computer Science Oct 2019–Nov 2023

MUST University *Pakistan*

- First Class Honours — A-Grade, ranked 5th/86, Dean's List for academic excellence.
- Strong emphasis on software development and research - Capstone: Research on University's Research Papers

SELECTED PROJECTS

ACRAMbly — Real-Time 6D Pose Estimation System Oct 2024–Present

Master Project, University of Bremen

- Integrated FoundationPose (model-free tracking) and GroundedSAM (segmentation) into a unified ROS2 perception node processing live RGB-D streams at interactive rates.
- Solved temporally consistent pose tracking across occlusions and sensor noise, directly analogous to stable object tracking in VFX compositing pipelines.
- Stack: ROS2 Jazzy · PyTorch · OpenCV · Intel RealSense SDK · TF2.

Multi-Backend Imputation Library for Explainable AI Nov 2025

AI Toolbox Hackathon — 1st Place · U Bremen Research Alliance

- Built a SHAP-compatible imputation library with a lazy-dispatch API supporting NumPy, PyTorch, and JAX backends.
- Implemented generic n-dimensional PatchGrouping for images, videos, and tensors, directly applicable to neural rendering and video decomposition tasks.

Anti-Money Laundering Detection Mar 2025
Bremen Big Data Challenge 2025 — 1st Place (Winner)

- Won the competition with an ensemble of Random Forest, XGBoost, and LightGBM achieving 95% F1-score on fraud detection; engineered 30+ domain-informed temporal and behavioural features.

TECHNICAL SKILLS

Computer Vision: 6D Pose Estimation, Instance Segmentation, Object Detection, RGB-D Processing, Scene Understanding, Real-Time Algorithms
CV Libraries: OpenCV (Advanced), FoundationPose, GroundedSAM, YOLO, Mask R-CNN, PCL

Deep Learning: PyTorch, TensorFlow, Graph Neural Networks, Geometrical Deep Learning

Programming: Python (Expert), C++ (Proficient), JavaScript

Robotics: ROS2 Jazzy, TF2, Sensor Integration, RealSense SDK

Infrastructure: Linux, Git, Docker, AWS/Azure/GCP

HONOURS & RECOGNITION

- 1st Place — Bremen Big Data Challenge 2025 (BBDC), Anti-Money Laundering ML.
- 1st Place — U Bremen Research Alliance AI Toolbox Hackathon 2025.
- Invited Speaker — 4 AI/ML conferences; organised 3+ workshops.
- 10 technical articles on Medium with 10,000+ total views across ML, CV, and AI topics.

CERTIFICATIONS & LANGUAGES

Certifications

DataCamp AI Engineer for Data Scientists Associate (Apr 2025–2027)
DeepLearning.AI Machine Learning Specialization
DataCamp Python Data Associate (Mar 2025–2027)
Microsoft Azure Data Engineer & Data Scientist Associate
GitHub Foundations (Apr 2025–2028)

Languages

English (Fluent)
German (Intermediate)

REFERENCES

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MSc supervisor

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BSc supervisor