

# Magdy Mahmoud

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Personal Homepage [magdyhasan.github.io](https://magdyhasan.github.io)

## Research Interests

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Scene understanding from visual and multi-modal data, especially monocular and multi-modal 3D scene understanding for autonomous driving and robotics. Interests include geometry-aware perception, vision and geometric foundation models, weak/self-supervised learning, 3D detection, segmentation, tracking, depth/shape estimation, and scene reconstruction.

## Education

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**M.Sc. Informatics**, Technical University of Munich (TUM), Germany; GPA: 1.9 / 1.0 May 2022 – Dec 2026

**B.Sc. Computer Science**, Thebes University, Egypt; GPA: 1.5 / 1.0 Oct 2014 – Aug 2018

## Research & Teaching Experience

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**M.Sc. Thesis / Current Research: Monocular and Multi-Modal 3D Scene Understanding**, TUM Dec 2025 – Present

- Researching foundation-model-based and geometry-aware approaches for 3D scene understanding in autonomous-driving settings, with emphasis on robust perception and reliable evaluation.

**Research & Teaching Assistant**, Technical University of Munich, Germany Dec 2022 – Apr 2025

- Teaching assistant for *Computer Vision 3: Detection, Segmentation and Tracking*; prepared and corrected exercises and supported tutorials.
- Researched **unsupervised semantic segmentation** using denoising diffusion models and student–teacher distillation; ran large-scale PyTorch experiments on GPU clusters.

**Guided Research: Multi-Modal 3D Object Detection**, TUM ([report](#)) Apr 2024 – Sep 2024

- Designed a LiDAR-image 3D detector with relation-aware reasoning for driving scenes; studied fusion strategies for 3D box localization.

**IDP: Semi-Supervised Vehicle Part-Segmentation**, TUM ([report](#) | [code](#)) Apr 2023 – Sep 2023

- Explored semi-supervised vehicle part segmentation in LiDAR point clouds to reduce annotation cost for autonomous-driving perception.

**Master-Praktikum: Unsupervised Video Segmentation**, TUM ([report](#) | [code](#)) Apr 2023 – Sep 2023

- Combined motion and appearance cues for unsupervised video object segmentation with optical-flow-based consistency losses.

## Industry Experience

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**Software Engineer Intern**, Google Shopping (Zurich team), Munich, Germany Aug 2022 – Dec 2022

- Developed a machine-learning system prototype for estimating offer freshness from product and price signals.

**Junior Machine Learning Engineer**, Aigorithm, Cairo, Egypt Nov 2020 – Apr 2022

- Developed computer-vision pipelines for data labeling, active learning, object detection, segmentation, and model deployment.

**Software Engineer Intern**, DevisionX, Cairo, Egypt Jun 2018 – Aug 2018

- Worked on ID verification using segmentation and recognition of Arabic text in TensorFlow, with Python/Flask backend integration.

## Selected Projects

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- **3DMM Estimation from Highly Distorted Images** ([code](#), [report](#)) – estimated 3D morphable model parameters from highly distorted images and analyzed robustness under camera distortion.
- **Semantic Segmentation with DGCNN on ScanNet** ([code](#), [report](#)) – implemented point-cloud semantic segmentation on the ScanNet indoor dataset.
- **Cobb Angle Estimation for Scoliosis Screening** ([project](#), [hackathon](#)) – built a deep-learning pipeline to estimate the Cobb angle from spine X-ray images for automatic scoliosis screening.
- **Additional computer-vision projects** – road damage detection, human action recognition, Arabic image captioning, and face-attribute prediction; selected examples on my homepage.
- **Additional software/data projects** – Kaggle forecasting, full-stack web prototypes, backend systems, and C++/algorithmic projects from undergraduate and self-directed work.

## Awards & Competitive Programming

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- **ICPC** – Qualified for the ICPC World Finals via ACPC 2021; multiple strong regional results (e.g. ECPC 2021: 6th, ECPCQ 2017: 2nd).
- **Facebook (Meta) Hacker Cup** – Reached Round 2 in 2019 and 2021; among the top contestants in Egypt.
- **ICPC contest judge** – Served as contest judge at several ICPC Egypt local contests and regionals.
- **Online course certificates** – Selected for an Egyptian scholarship to complete the Udacity Machine Learning Engineer Nanodegree (finished in 3 months vs. 6 expected) and completed the Deep Learning Specialization ([deeplearning.ai](#)).

## Skills

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**Programming, ML & Tools:** Python, C++, Java, SQL, Bash, Git, Linux, Slurm, Docker basics, AWS; PyTorch, NumPy, Open3D, OpenPCDet, W&B, TensorFlow/Keras, scikit-learn.

**Computer Vision:** monocular/multi-modal 3D perception, point clouds, semantic/instance segmentation, object detection/tracking, depth/shape estimation, autonomous-driving datasets.