Yue Chen

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Education

Technical University of Munich — *Munich*

M.Sc. in Robotics, Cognition, Intelligence, ***Grade 1.8/1.0*** — *Oct. 2021 - Nov. 2023*

- Thesis: Neural Scene Decomposition for Accurate Light and Material Reconstruction via Physically-Based Global Illumination Estimation.
- Relevant courses: Advances in 3D Computer Vision (1.0), 3D Spatial Learning (1.0), Multidisciplinary Design Optimization (1.0), Robot Motion Planning (1.7), Artificial Intelligence (2.0), Deep Learning (2.0).

Technical University of Munich — *Munich*

B.Sc. in Mechanical Engineering, Grade 2.5/1.0 — *Oct. 2017 - Sep. 2021*

- Thesis: Investigation of Graph Neural Network Approaches in Gear Transmission Synthesis.
- Relevant courses: Automotive Technology, Modern Information Technology, Machines Drawing and Computer Aided Design, Automatic Control, Industrial Automation, Electrical Drives, Machine Elements.

Experience

Visual Computing & Artificial Intelligence Lab, TUM — *Munich*

Student Researcher — *Sep. 2021 - Nov. 2023*

- Engaged in various machine learning projects including computer vision, object detection, and natural language processing.
- Directed student research teams, managing planning, strategic direction, and progress oversight to successfully meet project objectives.
- Contributed to multiple academic writing and publishing.

Technical University of Munich — *Munich*

Teaching Assistant — *Sep. 2018 - Nov. 2018*

- Managed tutoring sessions for over 50 students; delivered presentations to reinforce key course concepts.

Marine Engine Service Hamburg — *Hamburg*

Manufacturing Intern — *Jun. 2017 - Oct. 2017*

- Acquired foundational skills relevant to the manufacturing sector; supported procurement and shipping operations.

Selected Projects

Neural Image Editing via Ray Tracing — *Munich*

Visual Computing & Artificial Intelligence Lab, TUM — *Apr. 2022 - Nov. 2023*

- Developed a ray tracing machine learning model that learns a scene's geometry and surface materials from multi-view RGB images, enabling free-viewpoint relighting and material editing of the scene.
- Achieved state-of-the-art results, distinguished by realistic shading and significantly reduced computation time from 150+ hours to 5 minutes.
- Led a three-member student research team; utilized Python and C++ for programming; generated custom datasets using Blender.

Autonomous Driving Trajectory Planning with Temporal Logic — *Munich*

Chair of Robotics, Artificial Intelligence and Real-time Systems, TUM — *April. 2023 - Sep. 2023*

- Developed a spatio-temporally robust motion planning algorithm using temporal logic, optimized with Python and Gurobi.
- Enabled the optimized trajectory to withstand spatial perturbations (e.g., inaccurate sensors) and temporal perturbations (e.g., signal delays).

Neural 3D Visual Grounding with GNNs and Attention — *Munich*

Visual Computing & Artificial Intelligence Lab, TUM — *Sep. 2021 - Mar. 2022*

- Incorporated graph neural networks, natural language processing, and Transformer to model spatial relationships among object proposals, improving the accuracy for localizing objects based on linguistic descriptions by 8 percent.
- Worked as team leader in a two-student research team; utilized Python for programming, and GloVe and GRU for word embedding.

Skills

Programming	**Python** *(proficient)*, **C++** *(intermediate)*, MATLAB *(intermediate)*, HTML *(beginner)*
Tools	**PyTorch**, TensorFlow, Blender, Mitsuba, OpenCV, CATIA, Gurobi, LaTeX, Git, Linux, Photoshop
Languages	**German** *(C1)*, English *(C1)*, Chinese *(native)*, Cantonese *(native)*
Hobbies	Skiing, Snowboard, Basketball, Photography