Morui Zhu | Curriculum Vitae

uhziurom@gmail.com

Education

Budapest University of Technology and Economics — Budapest, Hungary
Master's in Computer Science (GPA: 3.6/4) — Feb 2022 – Jan 2024

(Supported by Stipendium Hungaricum Scholarship)

Related Courses: Computer Vision Systems : **5/5**, GPGPU Applications: **5/5**, High Performance Parallel Computing: **5/5**, Parallel Programming Laboratory: **5/5**, Information Theory: **5/5**

Southwest University — Chongqing, China
Bachelor's degree in Engineering — Sep 2017– July 2021

Research Interests

- 3D Computer Vision, Machine Learning, Computer Graphics

Publications

- **Morui Zhu**, Erik Szász, Mátyás Szántó, Márton Vaitkus, Gábor Sörös. Investigating crowdsourced neural radiance maps for autonomous vehicles. IEEE International Conference on Cognitive Mobility, 2023
- **Morui Zhu.**, Liu, C., Szirányi, T. A Global Multi-Temporal Dataset with STGAN Baseline for Cloud and Cloud Shadow Removal. International Conference on Image Processing and Vision Engineering, 2023
- Cheng Han, **Morui Zhu**, Kong Xinlin, Peng Huanqing, Peng Wei, Zhang Hao. Process monitoring and end-point identification of unattended liquid phase separation based on edge detection. China Safety Science Journal(CSSJ), 2023
- jiantong Ge, Xin Yang, **Morui Zhu**, Jinye Ran, Chi Zhai, Hao Zhang. Instance Segmentation of Transparent Glass Instruments in Complex Scene using ASPP-Solov2. Conference on Process Systems Engineering, 2022

Research Experiences

- **NeRF Models in Virtual Reality Environment (Master's thesis)** — Apr 2023 – Jan 2024
  Budapest University of Technology and Economics, Budapest
  Supervisor: Dr. Szántó Mátyás
  - Presented a crowdsourcing and mapping pipeline that enables the generation of accurate neural radiance field (NeRF) maps from camera feeds of autonomous vehicles.
  - Compared four different models (Nerfacto, TensoRF, Instant-NGP, 3D Gaussian Splatting), and evaluate the accuracy of the reconstructions based on the number of acquisition vehicles and trajectory variations.
  - Demonstrated interactive visualization of the NeRF maps in a Virtual Reality environment.

- **Remote Sensing for Earth Observation (Lab Project)** Mar 2022 – Mar 2023
  Institute for Computer Science and Control (SZTAKI), Budapest
  Supervisor: Dr. ChangLiu
  - Built a large, multi-temporal dataset on a global scale for removing clouds and cloud shadows from satellite imagery
  - Demonstrated the effectiveness of cooperation between drones and satellites with multispectral images in an early wildfire monitoring and rescue system
- **Computer Vision-Based Assistance System (Bachelor's Thesis)** May 2018 – Sep 2021
  Process Systems Engineering Laboratory, Southwest University
  Supervisor: Dr. Hao Zhang
  - Designed a Real-Time computer vision-based lab assistance system
  - Implemented an indoor uncontrolled fire detection method
  - Implemented a deep learning algorithm for indoor scene understanding
- **Deep Retinal Image Understanding (Summer Project)** July 2020 – Sep 2020
  Department of Electrical and Computer Engineering, University of Miami
  Supervisor: Prof. Mohamed Abdel-Mottaleb
  - Demonstrated visual explanation on U-Net based on Grad-CAM method.
  - Found the bottom neck layers in CNN and improved the accuracy in classification task.

Additional Experiences

- Wolfram Student Ambassador Southwest University
- Probabilistic Numerics Spring School 2023 University of Tübingen

Skills

- Languages: Python, C/C++, MATLAB
- Interface: MPI
- ML & DL Libraries: PyTorch, TensorFlow, Scikit-learn
- Others: OpenCV, Open3D
- CG: Open3D, OpenGL