

Shiyu Gao

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I'm a bachelor-straight-to-doctorate student at Institute of Computing Technology, Chinese Academy of Sciences (ICT,CAS). I'm in the 3rd year of my degree, advised by Prof. Zhaoqi Wang. I got my bachelor's degree from Harbin Institute of Technology (HIT) in 2019. My research interests lie in the field of computer vision and computer graphics, especially multi-view stereo, 3D reconstruction of large-scale scenes and human body from single or multiple images.

EDUCATION

PhD in Computer Applied Technology , <i>Institute of Computing Technology, Chinese Academy of Sciences</i>	Sep.2019 - Present
Bachelor of Engineering in Detection Guidance and Control Technology , <i>Harbin Institute of Technology</i>	Sep.2015 - Aug.2019

TECHNICAL EXPERIENCE

3D Human Animation Rendering Based on Unreal Engine <i>VR Lab @ICT, CAS</i>	Sep.2021-Present <i>Beijing, China</i>
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- We captured monocular RGBD images of human body in front of green-screen via a Kinect v2 camera. After splitting the human body from the green screen, we re-rendered the human body in the virtual scene with Unreal Engine.
- I am currently conducting research on real-time 3D human body rendering.
- Code is available at: <https://github.com/SibylGao/HumanRendering-UE4.git>

End-to-end Deep Learning Network for Multi-view Stereo <i>VR Lab @ICT, CAS</i>	Sep.2020 - Sep.2021 <i>Beijing, China</i>
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- Developed an coarse-to-fine algorithm to construct 3D models of high-resolution multi-view inputs.
- Obtained state-of-the-art results on both DTU and BlendedMVS datasets.
- Our paper (me as first author) is still under review. But some results and demos are available at: <https://github.com/SibylGao/MSCVP-MVSNet.git>

Traffic flow simulation & visualisation in Large Scale Evacuation Simulation System <i>Bachelor graduation thesis @ICT, CAS</i>	Feb.2019 - Jun.2019 <i>Beijing, China</i>
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- Constructed geometry and topology model of the road network based on OpenStreetMap and Baidu Map. Given the road network model in .xml file, I rendered and visualized it on the UI interface of the Large Scale Evacuation Simulation System.
- Given the starting and stopping positions for each vehicle, I planned path for all the vehicle, including macro path using A* Algorithm, fine-grained lane change and static obstacle avoidance. Which is for the purpose of visualising and simulating the movement of traffic through the road network.
- Integrated all the algorithms mentioned above into the simulation platform (using .NET framework based C#) as a module.
- Code is available at: <https://github.com/SibylGao/Car-Simulation.git>

Infantry Robot Vision System Design for ROBOMaster Robotics Competition <i>HIT Robotics Team</i>	Jun.2018 - Feb.2019 <i>Harbin, China</i>
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- Developed vision system including image grabbing, image pre-processing, digits recognition to make robots recognize the target.
- Developed an algorithm to detect the light bars on the target armors. Calculated rotation and translation matrix from camera to target by solving PnP Problem as light bars' length in world coordinates is known. Finally we located target robots and calculated shooting angles.
- Improved shooting accuracy by adding Kalman Filter to optimize the estimated target position.
- Implemented the above algorithms into C++ project.
- Code of my part can be found at: <https://github.com/SibylGao/Vision-system.git>

SKILLS

Tools and Languages	Python, Git, \LaTeX , Matlab, C++
Research skills	Deep Learning, Computer vision, Computer Graphics, Basic Numerical Analysis, Control Theory
Communication	English (writing and speaking), Chinese

PUBLICATIONS

Cost Volume Pyramid Network with Multi-strategies Range Searching.(Under Review)	Mar. 2022
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