

# Lin Gaoyuan

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## Education

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- **Master: Technical University of Munich, Germany** **Oct. 2020 - now**
  - Average note: **2.462/1.0**
  - Semester thesis: Estimation and Optimization of Depth Uncertainty for Bundle Adjustment in Dynamic Environments
  - Courses: Design of Electric Vehicles, Battery Systems Technical, Electrical Machines, Battery Storage, Actuators and Sensors in Electrical Drive Systems, Advanced Control, Finite Elements, AI in Production Engineering, Advanced Driver Assistance Systems in Vehicles, MATLAB / Simulink for Computer Aided Engineering, Quality Management, Statistical Learning and Data Analytics for Transportation Systems, Physics-Informed Machine Learning, Autonomous Driving Software Engineering, Introduction to Deep Learning, Computer Vision
  - Experiment Courses: Development of Intelligent Distributed Embedded Systems in Mechatronics - Laboratory, Mobility Data Analysis(Python)
- **Exchange Semester: Technischen Universität Darmstadt, Germany** **Oct. 2018 - Aug. 2019**
  - Average note: **2.4/1.0**
  - Courses: Control Engineering, Technical Thermodynamics 1, Heat and Mass Transfer, Material Science and Engineering 1
  - Bachelor Thesis: Modelling of the Microstructural Evolution of a Material During the Semi-Solid Forming
- **Bachelor: Beijing Institute of Technology, China** **Sept. 2015 - Aug. 2019**
  - Average note: **81.40/100**

## Skills

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- Languages: Chinese, English, German(DSH2)
- Programming Languages: Python, Matlab
- Simulation: Abaqus
- Computer Vision: NeRF model and relevant following research such as SSD-NeRF, Neus, GNT...
- Artificial Intelligence relevant: Pytorch, Transformer, Diffusion, GAN, SVR, CNN, RNN

## Projects

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### The Application of Transformer-based Models in Dynamic Outdoor Scenarios (Master thesis)

*May.2024 - Nov.2024*

- Applied **reconstruction of outdoor scenario** based on **Transformer-based Network** and **NeRF Principle**.
- Optimized rendering quality with **Anti-Aliasing module** and **fine-sampling approaches**.
- Constructed a initial rendering model integrated **CLIP feature**.
- Result is shown in: [https://github.com/TumLinGaoyuan/Master\\_thesis\\_result\\_LinGaoyuan](https://github.com/TumLinGaoyuan/Master_thesis_result_LinGaoyuan)

### Estimation and Optimization of Depth Uncertainty for Bundle Adjustment in Dynamic Environments (Semester thesis)

*Aug.2023 - Apr.2024*

- Applied **rendering of vehicle image** based on **NeRF and Diffusion model(SSD-NeRF)**.
- The relevant optimization approach of depth estimation of the object based on **Neus**.

### 3D scene reconstruction(challenge of computer vision)

*Jun.2023 - Jul.2023*

- Extract **feature points of objects** in each image and perform **feature point matching** on different images.
- Output the matched feature points as multiple **point cloud** and create **simple geometric cubic** based on it to represent the object.