

Huitong Yang

Email : huitongy0126@gmail.com

Mobile : (+86)18704103928

EDUCATION

- **Liaoning University of Technology** Liaoning, China
Bachelor of Engineering in Control Engineering Sept. 2015 – Jun. 2019
- **Guangdong University of Technology** Guangdong Guangzhou, China
Master's degree of Optical Engineering Sept. 2019 – Jun. 2022

WORK EXPERIENCE

- **ShanghaiTech University** Shanghai, China
Research Assistant (Supervisor: Yuexin Ma) Mar. 2022 - Dec. 2022
 - Survey Vision-Centric bird's eye view(BEV) Autonomous Driving perception architecture
 - Implementation of LiDAR-Camera fusion perception framework and related validation
 - Research unsupervised domain adaptation system for 3D scene understanding
- **Tsinghua University** Beijing, China
Research Assistant (Supervisor: Hang Zhao) Jan. 2023 - Now
 - Propose an unified architecture for self-driving motion forecasting and planning
 - Investigate End-to-End 3D Detection, Tracking and Motion Forecasting in bird's eye view(BEV)

PAPER LIST

- Vision-Centric BEV Perception: A Survey
Yuexin Ma, Tai Wang, Xuyang Bai, **Huitong Yang**, Yuenan Hou, Yaming Wang, Yu Qiao, Ruigang Yang, Dinesh Manocha, Xinge Zhu
Submitted to IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE(TPAMI)¹ 2022 ¹<https://arxiv.org/pdf/2208.02797.pdf>
- Polar-based Adaptive BEV Perception for Autonomous Driving
Huitong Yang, Xuyang Bai, Xinge Zhu, and Yuexin Ma
Accepted by IEEE International Conference on Robotics and Automation(ICRA) 2023
- GAMNet: Global Attention Via Multi-scale Context for Depth Estimation Algorithm
Huitong Yang, Qi Wang, Liang Lei
Submitted to Measurement Science and Technology(MST) 2022
- Cross-modal and Cross-domain Knowledge Transfer for Label-free 3D Segmentation
Jingyu Zhang^{†1}, **Huitong Yang**^{†2}, Dai-Jie Wu², Jacky Wai Keung¹, Xuesong Li⁴, Xinge Zhu^{*3} and Yuexin Ma^{*2}
IEEE/RSJ International Conference on Intelligent Robots and Systems(IROS) 2023

RESEARCH EXPERIENCE

- **Vision-Centric BEV Perception: A Survey**
TPAMI Submission. Fourth Author (Supervisor: Yuexin Ma) Jun. 2022 - Aug. 2022
 - To the best of our knowledge, this is the first survey to review the recent progress in solving the view transformation between the perspective view and bird's eye view(BEV).
 - We present the most recent related methods of vision-centric BEV perception, clearly classifying them according to the core idea and downstream vision tasks. Detailed analysis and comparison on performance and limitation for these methods are also provided.
 - We propose extra extensions of BEV perception works, including the multi-task learning strategies, fusion operations in BEV, and empirical training tricks, to facilitate the implementation and development of related approaches.
- **Polar-based Adaptive BEV Perception for Autonomous Driving**
ICRA 2023 accept. First Author (Supervisor: Xinge Zhu & Xuyang Bai) Jun. 2022 - Sep. 2022
 - We propose a novel Polar-based BEV perception method, which can adapt to various computing budgets for multiple deployments based on one training.
 - We leverage the information interaction among multi-scale features to enhance the feature representation for better adaptation.
 - Our method achieves state-of-the-art generalization capability of inferring novel scale of feature maps for 3D detection on large-scale autonomous driving dataset.

- **GAMNet: Global Attention Via Multi-scale Context for Depth Estimation Algorithm**
Measurement Science and Technology Submission. First Author *Jan. 2021 - Jun. 2021*
 - We design a lightweight global duple attention module for aggregating the global information from the horizontal and vertical spatial dimensions, and capturing the cross-channel relationships efficiently along the channel dimension.
 - We introduce a multi-scale fusion module to reconstruct the feature pyramid, promoting the spatial coherence among the adjacent scales, and aligning the contexts from multiple scales.
 - We apply a 3D densely connected module in cost aggregation to refine matching feature representation and promote the sensitivity to salient matching details.
 - We propose a linear measurement strategy on spatial grasping point to verify the relative 3D reconstruction accuracy of the end-to-end stereo algorithms in actual application scenarios.²

²The video of 3D reconstruction visual guidance system based on GAMNet: <https://www.bilibili.com/video/BV19r4y1U7oR/>

AWARD-WINNING EXPERIENCE

- **Academic Scholarships**
 - Guangdong University of Technology Academic Third Class Scholarship for Master's Degree Students for the academic year 2018-2021.
- **Competition Awards**
 - National Third Prize of the 8th National Student Optoelectronic Design Competition.
 - National Second Prize of the "Huawei Cup" 17th China Post-Graduate Mathematical Contest in Modeling.