Guorun Yang

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EDUCATION

Tsinghua University September 2013 ~ July 2019

Ph.D., Department of Computer Science

Research Interests: Computer Vision

Lanzhou University August 2009 ~ June 2013

B. Eng., Department of Computer Science and Technology

REASEARCH & PROJECT

Dec. 2016 ~ May 2019 **Stereo Vision**

- **Dataset.** Construct a large-scale dataset called DrivingStereo for stereo matching in autonomous driving scenarios, along with two novel metrics to evaluate performance.
- **Exploit Semantic Information**. Propose SegStereo model which combines semantic cues to improve disparity estimation, especially for texture-less regions. The method achieves state-of-art level on both KITTI Stereo and Scene Flow datasets.
- **Domain Adaptation**. Present a synthetic-realistic collaborative learning strategy to help the adaptability of stereo models across different domains.
- **Optical Flow**. Utilize a guided learning method to train optical flow model, which reaches state-of-art results on KITTI Flow benchmark.
- **Basic Structure**. Design an end-to-end network for stereo matching. This network contains residual blocks, correlation layer and up-sample deconvolutions.
- 5 papers accepted by CVPR 2019, ECCV 2018, ACCV 2018, ICPR 2018, ICONIP 2017

Feb. 2013 ~ Present **Autonomous Driving**

- **Obstacle Detection.** Develop obstacle detection module on autonomous driving platform, including ground detection, point cloud clustering, object detection and tracking.
- **Pre-processing of Point Cloud.** Distortion and filtration of LiDAR point cloud. Multi-frame fusion based on ego-motion. Familiar with PCL library.
- **Calibration.** Self-calibration of LiDAR, joint calibration of LiDAR and camera.

Feb. 2018 ~ Jul. 2018 **Pedestrian Detection**

- **Multi-scale Model**. Utilize multi-scale CNN model (MSCNN) to detect pedestrian. On specific dataset, the average precision is 89% (easy), 80% (moderate), 77% (hard).
- **Occlusion Handling**. Embed depth information to detection model to alleviate the problem of occlusion. The depth information is computed by stereo models.

Dec. 2014 ~ Jun. 2015 **Sequence Prediction**

- **Echo State Network.** Use echo state network (ESN) to predict discrete time sequence. The average error of NARSE sequence is less than 0.05.

WORKING EXPERIENCE

Intern Researcher, SenseTime, Beijing Oct. 2016 ~ Present

Focus on stereo vision related to autonomous driving under the supervision of Jianping Shi.

PUBLICATIONS

1. DrivingStereo: A Large-Scale Dataset for Stereo Matching in Autonomous Driving Scenarios.
Guorun Yang, Xiao Song, CHaoqin Huang, Zhidong Deng, Jianping Shi, Bolei Zhou.
*IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019*

2**.** SegStereo: Exploiting Semantic Information for Disparity Estimation.
Guorun Yang, Hengshuang Zhao, Jianping Shi, Zhidong Deng, Jiaya Jia.
European Conference on Computer Vision (***ECCV**), 2018*

3. SRC-Disp: Synthetic-Realistic Collaborative Disparity Learning for Stereo Matching.
Guorun Yang, Zhidong Deng, Hongchao Lu, Zeping Li
*Asian Conference on Computer Vision (**ACCV**), 2018.*

4**.** Masked Label Learning for Optical Flow Regression.
Guorun Yang, Zhidong Deng, Shiyao Wang, Zeping Li.
*International Conference on Pattern Recognition (**ICPR**), 2018*

5. End-to-End Disparity Estimation with Multi-granularity Fully Convolutional Network.
Guorun Yang, Zhidong Deng.
*International Conference on Neural Information Processing (**ICONIP**), 2017*

6. A Computational Model of Match Decision-making Problem Using Spiking SHESN with Reward-modulated Reinforcement Learning.
Zhidong Deng, **Guorun Yang**.
*International Conference on Neural Information Processing (**ICONIP**), 2015.*

7. Drivable Road Detection Based on Dilated FPN with Feature Aggregation.
Xiaolong Liu, Zhidong Deng, **Guorun Yang**.
*International Conference on Tools with Artificial Intelligence (**ICTAI**), 2017.*