Depu Meng (孟德普)

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Education

University of Science and Technology of China — Hefei, Anhui, China
Ph.D in Automation (Advisor: Dr. Jingdong Wang and Prof. Houqiang Li) — *Sept. '18 – present*

University of Science and Technology of China — Hefei, Anhui, China
B.S. in Electrical Engineering (School of Gifted Young) — *Sept. '14 – Jun. '18*

Work Experience

Meituan — Beijing, China
Research Intern, Meituan Autonomous Delivery Group — *Aug. '21 – present*
Mentor: Dr. Changqian Yu

Microsoft Research Asia — Beijing, China
Research Intern, Visual Computing Group — *Jul. '19 – Jul. '21*
Mentor: Dr. Jingdong Wang

Microsoft Research Asia — Beijing, China
Research Intern, Visual Computing Group — *Jul. '17 – Jul. '18*
Mentor: Dr. Jingdong Wang

Research Interests

Autonomous driving: 3D perception and motion prediction. I am passionate in autonomous driving research. I am interested in / currently working on joint perception and motion prediction from LiDAR point cloud data. I am looking forward to research opportunities on motion prediction / 3D object detection / LiDAR segmentation problems.

Publications

Depu Meng, Changqian Yu, Deheng Qian, Houqiang Li, Dongchun Ren.
HyMo: Hybrid Motion Representation Learning for Prediction from Raw Sensor Data.
In submission.

Changqian Yu, **Depu Meng**, Deheng Qian, Dongchun Ren.
PolarMotion: Multimodal Motion Prediction with Polar Anchors.
In submission.

Depu Meng*, Xiaokang Chen*, Zejia Fan, Yuhui Yuan, Gang Zeng, Houqiang Li, Lei Sun, Jingdong Wang.
Conditional DETR for Fast Training Convergence.
ICCV 2021.

Depu Meng, Zigang Geng, Zhirong Wu, Bin Xiao, Houqiang Li, Jingdong Wang.
Consistent Instance Classification for Unsupervised Representation Learning.
ICCV 2021 Workshop: Self-supervised Learning for Next-Generation Industry-level Autonomous Driving.

Ke Sun, Zigang Geng, **Depu Meng**, Bin Xiao, Dong Liu, Zhaoxiang Zhang, Jingdong Wang.
Bottom-Up Human Pose Estimation by Ranking Heatmap-Guided Adaptive Keypoint Estimates.
Tech Report.

Liming Zhao, Mingjie Li, **Depu Meng**, Xi Li, Zhuowen Tu, Zhaoxiang Zhang, Yueting Zhuang, J. Wang.
Deep Convolutional Neural Networks with Merge-and-Run Mappings.
IJCAI 2018.

Research Experience

Joint Perception and Motion Prediction from Raw Sensor Data *Aug. '21 – present*

- We propose a framework that jointly performs instance-wise motion (global motion) prediction and point-wise motion (local motion) prediction. We find out that global motion prediction and local motion prediction can mutually benefit from each other. (In submission).

Transformer based Object Detection *Dec. '20 – Jul. '21*

- Identify and solve the slow training convergence problem in DETR. Introduce conditional spatial embedding to dynamically shrink the search space of cross-attention to object extremities and region inside objects. $10\times$ training speed-up is achieved. (Accepted by ICCV 2021).

Unsupervised Representation Learning *Apr. '20 – Oct. '20*

- Study the instance classification method in unsupervised representation learning. Propose a consistent instance classification method to ease the optimization difficulty in instance classification. Verify the quality of learned representations on varies down-stream tasks: object detection, instance segmentation, semantic segmentation, pose estimation. (Accepted by ICCV Workshop 2021).

Real-time Semantic Segmentation *Dec. '19 – Mar. '20*

- Build a high-efficiency semantic segmentation network based on HRNet. The model is shipped to Microsoft Form Recognizer for Table Segmentation.

Classification Network Architecture Design *Jul. '17 – Jul. '18*

- Improve CNN parameter efficiency by adopting idempotent transform and multi-branch structure (Accepted by IJCAI 2018).
- Restudy the residual block in ResNetV1 and ResNetV2, provide novel understanding about ResNetV2 block (Bachelor Thesis).

Engineering Experience

Deep Learning GUI Development Microsoft Research Asia

Front-end developer *Oct. '17 – Dec. '17*

- UWP based front-end, Python based back-end software. Use Keras as deep learning platform.
- Support remote connection, GUI-based model building, editing, saving, loading for plain CNN architectures. Support loss curve display.
- Project is open-source: github.com/NNBaby/NNUI

Awards

Star of Tomorrow Internship Award, Microsoft Research Asia *Jul. '18*

The AEGON-INDUSTRIAL Fund Scholarship, USTC *Oct. '15*

Services

Conference Reviewer: CVPR 2022

Extracurricular Activities

Vice Minister, Publicity Department, Student Union, SCGY, USTC *Sept. '15 – May '16*

Class Monitor, 14 Innovation Class 3, SCGY, USTC *Sept. '15 – May '16*

English Abilities

TOEFL: Reading 23/30 Listening 26/30 Speaking 20/30 Writing 23/30 Total 92/120.