Yijie Li

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EDUCATION

Beijing-Dublin International College, Beijing University Of Technology (BJUT) 09/2019-07/2023

- Major: **Software Engineering** (**Full English Teaching**); Current GPA: **3.79/4.2**; IELTS: **7.0**
- **Computer Skills**: Python, C/C++, Java, Pytorch, OpenCV, CUDA

PUBLICATIONS

[1] Hewei Wang, **Yijie Li**, Shijia Xi, Shaofan Wang, Muhammad Salman Pathan, Soumyabrata DEV. *AMDCNet: An Attentional Multi-Directional Convolutional Network for Stereo Matching*, Displays, Accepted.

[2] Hewei Wang, **Yijie Li**, Bolun Zhu, Kaiwen Gong, Ziyuan Wen, Shaofan Wang, Soumyabrata Dev. *SYGNet: A SVD-YOLO based GhostNet for Real-time Driving Scene Parsing*, 29th IEEE International Conference on Image Processing (ICIP 2022), Accepted.

[3] Hewei Wang, Kaiwen Gong, Muhammad Salman Pathan, **Yijie Li**, Bolun Zhu, Ziyun Wen, Soumyabrata DEV. *MFCSNet: Musician-Follower Complex Social Network for Measuring Musical Influence*, Entertainment Computing, Under Review.

[4] **Yijie Li**, Hewei Wang, Shaofan Wang, Yee Hui Lee, Muhammad Salman Pathan, Soumyabrata Dev. *UCloudNet: A Residual U-Net with Deep Supervision for Cloud Segmentation,* Preprint.

[5] **Yijie Li**, Hewei Wang, Shaofan Wang, Soumyabrata Dev. *DAANet: Dual Attention Aggregating Network for Salient Object Detection*, Preprint.

[6] **Yijie Li**, Hewei Wang, Shaofan Wang, Yee Hui Lee, Muhammad Salman Pathan, Soumyabrata Dev. *BSANet: Bilateral Segregation and Aggregation Network for Real-time Cloud/Sky Segmentation*, Preprint.

RESEARCH EXPERIENCES

RA of Prof. Yongjin Liu's Research Group, Tsinghua University 01/2022-Present

- Study Generative Adversarial Networks (GAN), Denoising Diffusion Probabilistic Models (DDPM), style transfer, and style-model based image attribute manipulation. Currently focusing on StyleGAN based image attribute manipulation and 3D point-cloud generation and manipulation.

RA of Prof. Soumyabrata DEV's Research Group, University College Dublin 01/2021-11/2022

Project 1: "AMDCNet: An Attentional Multi-Directional Convolutional Network for Stereo Matching"

- Contributed to proposing an attentional multi-directional convolutional network (AMDCNet) for circumventing some issues related to stereo matching.
- Mainly responsible for evaluating AMDCNet on KITTI 2015 dataset and completing the comparative tests of error matching rate and other matrices. Our proposed AMDCNet has better depth estimation of details and higher accuracy compared with partial models of the same type.

Project 2: "SYGNet: A SVD-YOLO based GhostNet for Real-time Driving Scene Parsing"

- Participated in the experimental design, model training, and performance analysis; Evaluated the effect of GhostNet light-weight module of SYGNet.

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Project 3: "UCloudNet: A Residual U-Net with Deep Supervision for Cloud Segmentation"

- Proposed a model for ground-based cloud segmentation by conducting several experiments.
- Designed the structure of UCLoudNet, performed different training configurations on data sets, and analyzed the performance of proposed method.

Project 4: "DAANet: Dual Attention Aggregating Network for Salient Object Detection"

- Completed the research on salient object detection and finished a research paper as first author. Designed the DAANet model and performed qualitative and quantitative evaluation and ablation study on model structures. Our proposed DAANet is proved to have better performance than pervious approaches.

Project 5: "A bilateral Segregation and Aggregation Network for Real-time Cloud/Sky Segmentation"

- Leading a research work that conducted advanced research on ground-based sky/cloud segmentation and proposed a new model called BSANet.
- Our proposed new method only uses 70.6% less parameters, but achieves better accuracy comparing with state-of-the-art approaches. All three configurations of our approach can inference in real-time. We introduced a simple and quick pre-training strategy for sky/cloud segmentation to improve the accuracy.

PROJECT EXPERIENCES

Project 1: "TinyDL: A simple deep learning system"

- Developed a simple deep learning system with dynamic computation graph using python.
- Currently available functions and modules include basic auto-gradient, optimizers (Adam, SGD, etc.), network layers (Linear, ReLU, Softmax, BatchNorm1d, etc.), and loss functions.
- Test this system with basic ML problems and trained MNIST dataset with multilayer perceptron.

Project 2: "PaddlePaddle reproduction of Denoising Diffusion Probabilistic Models (DDPM)"

- Reproduced the paper Denoising Diffusion Probabilistic Models with PaddlePaddle from scratch.
- Trained the original attention-U-Net on CIFAR10 and a simplified FPN (remove attention module, replace concatenation with addition) on CelebA-HQ (128x128).
- Adopted DDIM on pre-trained DDPM to speed up the sample process.

Project 3: "A CUDA extension for Python"

- Implemented a CUDA extension for speeding up tensor operations in Python.
- Used mixed programming with C++ and python to implement functions that currently support many basic operations of tensor, including array-slice, broadcast, exp, log, etc. Many operations such as matrix multiplication from CUBLAS library are also integrated to this extension.

HONORS AND AWARDS

- Academic Excellence Award of BJUT 10/2022
- Academic Excellence Award of Beijing-Dublin International College, BJUT 09/2021
- Academic Excellence Award of Beijing-Dublin International College, BJUT 09/2020