● Phone: +86 188 1083 3218 ● E-mail: brucegu@umd.edu ●Website: gutianpei.github.io

Tianpei Gu

Education

University of Maryland at College Park ***Expected: Dec 2020***

- B.S. in **Computer Science**, B.S. in **Mathematics-Statistic** Track (Double Major), Overall GPA: 3.7
- **TA** for ***CMSC131 Object-Oriented Programming***: designed course projects, led class discussions, held office hours, etc.

Publications:

[1] Tianpei Gu, Guangyi Chen, Jiwen Lu, Ji Lin, Jie Zhou

Attention Pyramid for Person Re-Identification

Proceeding to *IEEE Transcations on Image Processing(**TIP**),* 2020

Research and Industry Experience

Intelligent Vision Group, Department of Automation, Tsinghua University

Research Assistant, Supervisor: ***Prof. Jiwen Lu and Prof. Jie Zhou*** 10/2020-Present

Research Topic: ***Causal Inference and Person Re-Identification***

- Propose to draw the counterfactual causality from the traditional trained "biased" network to infer the effect from bad bias, then remove them. Proposed a novel deep neural network for Person Re-ID task to make causal intervention in training and counterfactual reasoning in inference to remove the bad while keep the good features.
- Proposed an attention pyramid structure for Person Re-ID task to focus more on local attention of the feature map while keep the global attention of a human image. Our method outperforms the state-of-the-art methods by +5% with -40% computational cost.

Perception and Robotics Group, University of Maryland Institute of Advanced Computer Studies

Research Assistant, Supervisor: ***Prof. Yiannis Aloimonos*** 08/2019-Present

Research Topic: ***Person Re-Identification and Multi-Object Tracking***

- Conducted literature review (100+ papers) and experimented with person re-id frameworks from groundbreaking papers.
- Proposed a novel CNN-based network to re-identify person based on their movement style.
- Built an online and in-memory system to re-identify people with 85% accuracy under clean image setting without training.

Research Topic: ***3D Reconstruction***

- Replicated results of top conference papers using state-of-the-art tools (Human Dynamic, SMPL, OpenSFM)
- Customized existing 3D construction methods for our dataset and maintained the human 3D reconstruction methods survey.

Beijing Photon Dance Tech Inc.

Algorithm Leader, Co-Founder 07/2020-Present

- Developed a human motion capture and analysis tool using ***Microsoft Kinect camera***.
- Proposed an end-to-end solution from extracted 3D point cloud with multiple views to automatic motion difference evaluating. Participated in multi-view point cloud calibration and developing of DL-based merging algorithm.
- Founded at Skywork Team Club, Tsinghua university

Text-based Person Search (2020), Course Project of CMSC498L (Deep Learning)

- Improved Image Captioning performance by adding **Batch Normalization** and **Instance Normalization** layers into our network and employing the **triplet loss** as the loss function, **Resnet50** and **Bi-LSTM** as backbone network.
- Outperformed current state-of-the-art methods on rank-5 and rank-10 by 1% and 2.3% and achieved comparable result on rank-1, using the **CUHK Person Description Dataset**.

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Technical Skills:

Programming: Java, Python, C, C++, Assembly, MATLAB, Ruby, Rust, Ocaml, Git, Shell
Deep Learning framworks: Keras, TensorFlow, PyTorch