Shijie Wang

Department of Computer Science, Brown University

EDUCATION

Brown University, Providence, RI, US *Department of Computer Science* 09/2021 – now

Ph.D. student in Computer Science

- Programming: Python, C++, Java, Assembly; Qt, Latex
- Research Areas: Computer Vision, Machine Learning

Tsinghua University, Beijing, China *School of Software* 09/2016 – 07/2021

B.Eng. in Software Engineering

- Overall GPA: **3.67**/4.0 **88.7**/100
- Major GPA: **3.71**/4.0 **89.5**/100

Selected Highlight Courses and Scores

Principles of Compilation	4.0	Principles of Database Systems	4.0
JAVA and Object-Oriented Programming	4.0	Formal Language and Automata	4.0
Fundamentals of Computer Graphics	4.0	Introduction to Machine Learning	4.0
Deep Learning	4.0	Student Research Training	4.0(A+)

Awards and Honors

Outstanding Graduate Awards, Tsinghua	2021
Scholarship for Academic Excellence, Tsinghua	2018&2019&2020
Member of Tsinghua University Initiative Scientific Research Program (funding: 30,000￥)	2019
1st Prize in Student Research Training Program, Tsinghua	2019
2nd Prize in Software Design Contest, Tsinghua	2018

PUBLICATION

Pose Recognition with Cascade Transformers (CVPR 2021)

Ke Li*, Shijie Wang*, Xiang Zhang*, Yifan Xu, Weijian Xu, Zhuowen Tu

(*equal contribution)

RESEARCH

Pose Recognition with Cascade Transformers 07/2020 – 11/2020

Supervised by Prof. Zhuowen Tu, University of California, San Diego

- Presented a regression-based 2D human pose recognition method using cascade Transformers consisting of a person detection Transformer and a keypoint detection Transformer named Pose Regression TRansformers (PRTR).
- PRTR achieves SOTA compared to other existing regression-based methods on the challenging COCO dataset.
- The work has been accepted by CVPR 2021.

Study of Transferability of Deep Neural Network for Regression 05/2020 - 08/2020

Supervised by Associate Prof. Mingsheng Long, Tsinghua University

- The knowledge learned from the classification task can be partly used for regression, for the backbone networks, the lower layers have better transferability than upper layers.
- We analyzed the difference between classification and regression and the reason why regression task is hard to transfer. The state space is the essential difference between classification and regression.
- Replacing Batch Normalization with Instance Normalization can improve the transferability of DNN significantly, indicating regression transfer has some similarity with style transfer like a single image domain adaptation problem.
- Designing baseline models and doing more confirmatory experiments.

Transferable Attention for Domain Adaptation 07/2019 - 10/2019

Supervised by Associate Prof. Mingsheng Long, Tsinghua University

- Presented the dimensional symmetry attention model for domain adaptation to improve the transferability of DNN.
- Used domain discriminative method to generate dimensional symmetry transferable attention: spatial, channel-wise and instance-wise transferable attention.
- Made transferable attention a standard and plug-in module suited for different domain adaptation models such as DANN and CDAN in different dataset like Office-Home and DomainNet, exceeding SOTA in some tasks on these datasets.

Self-Supervised Learning for Action Recognition by Hierarchical Order Prediction Network 12/2018 – 2/2019

Cooperated with Doctoral Student Zhangjie Cao, Stanford University

- Learnt about classic method for action prediction such as Two-Stream and C3D, read some papers about unsupervised learning method for video such as Order Prediction Network (OPN).
- Presented the Hierarchical Order Prediction Network, using pyramid-shaped temporal sequence sorting structure focusing on short-term frame and long-term segment sequences order to learn video features self-supervisedly.

- Compared with single frame-wise sequence sorting structure, the accuracy of action recognition got improved from 53.2 to 53.5 on UCF-101 dataset.

INTERNSHIP

Kwai Inc. | *Machine Learning Intern of MultiMedia Understanding Group* 07/2019 – 08/2020

- Kwai is one of the largest social media company in China.
- Built a **multimodal** machine learning model with multi-frame feature, text feature and audio feature for video content review, resulting in great improvement in F-score; our model has been put into practical use.
- Accumulated machine learning life cycle and big data system development experience, including data wrangling, feature engineering and model deployment.

SELECTED COURSE PROJECT

San Francisco Crime Classification

- Complete adequate work in data exploration, feature engineering and visualization to prove model performance.
- Build different models including XGBoost, LGBM and KNN and use Bayesion Optimization to optimize hyperparameters.

Wechat Game: Doodle Gold Miner

- Course project for course Web Front-end Technology. Using wechat dev-tools and Cocos Creator.
- I work on UI design, main logic for the game, designing animation in game, wechat open domain ranking board, level system and store system. I invited about 40 people to play the demo version.

C To LLVM Compiler

- Course project for course Principles of Compilation. Designing a compiler frontend to convert C language to LLVM IR.
- Use python and Antlr, the compiler supports most grammar in C, such as structure and array, some test codes are attached.

FTP Project & RTP Project

- Both are projects for course Computer Network.
- In the FTP project, I complete a FTP server according to RFC 959 and a FTP client with user-friendly GUI with support for resuming from break-point. The FTP server is compatible with many widely-used FTP clients like FileZilla.
- In the RTP project, I complete an RTP server according to RFC 1889 and a streaming media player client. The server and client support multiple video formats like avi, flv, mp4 and iso, lyrics display and speed modification.

EXTRACURRICULAR ACTIVITES

- Vice president of Microsoft Club in Tsinghua University, member of Microsoft Summer Camp, 2019.
- Member of football team in school of Software Engineering and department of Electronic Engineering.
- Champion of Yuehan Ma Campus Football Cup, 2018.