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
- Research Areas: Computer Vision, Deep Learning
- Advisor: Professor Chen Sun

Tsinghua University, Beijing, China   *School of Software*   09/2016 - 07/2021
B.Eng. in Software Engineering
Outstanding Graduate
- Research Areas: Transfer Learning, Computer Vision

AWARDS & HONORS

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

PUBLICATION

Pose Recognition with Cascade Transformers (CVPR 2021)
Ke Li*, Shijie Wang*, Xiang Zhang*, Yifan Xu, Weijian Xu, Zhuowen Tu
(*equal contribution)

RESEARCH

Study on RL-Based Vision-Language Navigation (Ongoing)   10/2021 - Now
Supervised by Prof. Chen Sun, Brown University
- Working on Vision-Language Navigation task on ALFRED dataset.
- Designing model-free Reinforcement Learning method with transformer structure for VLN task.
- Exploring methods for better Cross-Modal fusion on vison and language information and feature representation.

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.

SERVICE

Conference Reviewer:
- The Conference on Computer Vision and Pattern Recognition (CVPR)   2022

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.