XIMENG SUN

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EDUCATION

Ph.D. in Computer Science January 2019 - present
the Computer Science Department,
Boston University
Advisor: Prof. Kate Saenko

Master of Science in Electrical and Computer Engineering August 2016 - April 2018
Department of Electrical Engineering and Computer Science,
University of Michigan, Ann Arbor
GPA: 4.00/4.00

Bachelor of Engineering in Communication Engineering September 2012 - June 2016
School of Information and Engineering
Beijing University of Posts and Telecommunications,
Cum. GPA: 92.82/100, Major GPA: 94.85/100, Rank: 1/589

SKILLS AND COURSEWORK

Skills Programming: Python • Matlab • LaTeX • C • C++
Deep-learning Libraries: Pytorch • Tensorflow

Main Coursework Grad-level: Computer Vision, Machine Learning, Reinforcement Learning, ...
Undergrad-level: Digital Image Processing, Data Structure, C/C++ Programming, ...

PROJECTS

Efficient Knowledge Sharing in Multi-Task Learning June 2019 - Nov 2019
Research Project

Goal: Explore *what to share* in the Multi-Task Learning

We propose a novel and differentiable approach for adaptively determining the feature sharing pattern across multiple tasks (*what layers to share across which tasks*) in deep multi-task learning.

- We learn the sharing pattern jointly with the network weights through standard back-propagation, making it highly efficient. We also introduce two new loss terms for learning a compact multi-task network with effective knowledge sharing across tasks and a curriculum learning strategy to benefit the optimization.
- We conduct extensive experiments on three MTL benchmark datasets (NYU v2, CityScapes and Tiny-Taskonomy) with variable number of tasks to demonstrate the superiority of our proposed approach over state-of-the-art methods.
- Collaborators: Rameswar Panda, Rogerio Feris, and Prof. Kate Saenko

Action-conditioned Video Generation May 2018 - Nov 2018
Research Project

Goal: Generate a short video clip given action category

We design a Two-stream Variational Adversarial Network to generate the realistic videos.

- We introduce dual-task learning to train motion and content stream separately in an alternating manner.
- Our model achieves the state-of-the-art result on Weizmann, MUG Facial Expression and our SynAction Datasets.
- Advisor: Prof. Kate Saenko

Video Caption Generation for HRI-Caption Dataset June 2018 - August 2018
Research project funded by Honda Research Institute

- **Goal**: Generated plausible captions using the driving videos and sensor data
- Adopt s2vt caption generation model with additional sensor inputs to generate 3 different caption descriptions for a 20-second video.
- Advisor: Prof. Kate Saenko

Video Frame Inpainting May 2017 - May 2018
Research Project funded by DARPA

- **Goal**: Fill in missing frames in the video by having a glimpse of the past and the future
- Design a Temporally-Aware Network, the 1st deep learning method to tackle this problem
- Our method get encouraging quantitative and qualitative results on KTH Actions, HMDB51 and UCF101 datasets
- Accepted as Poster to ACCV and the code is available online. [pdf] [demo][code]
- Collaborator: Ryan Szeto, Advisor: Prof. Jason Corso

RESEARCH PUBLICATION

"AdaShare: Learning What To Share For Efficient Deep Multi-Task Learning",
Ximeng Sun, Rameswar Panda, and Rogerio Feris, arXiv preprint arXiv:1911.12423 (2019)

"A Two-Stream Variational Adversarial Network for Video Generation",
Ximeng Sun, Huijuan Xu, and Kate Saenko, Winter Conference on Applications of Computer Vision, 2020.

"Weakly-supervised Compositional Feature Aggregation for Few-shot Recognition",
Ping Hu, **Xiemng Sun**, Kate Saenko, and Stan Sclaroff,
arXiv preprint arXiv:1906.04833 (2019)

"Domain Agnostic Learning with Disentangled Representations",
Xingchao Peng, Zijun Huang, **Ximeng Sun**, and Kate Saenko,
International Conference on Machine Learning, 2019.

"Similarity R-C3D for Few-shot Temporal Activity Detection",
Huijuan Xu, Bingyi Kang, **Ximeng Sun**, Jiashi Feng, Kate Saenko and Trevor Darrell,
arXiv preprint arXiv:1812.10000 (2018)

"A Temporally-Aware Interpolation Network forVideo Frame Inpainting" (journal version),
Ryan Szeto, **Ximeng Sun**, Kunyi Lu, and Jason J. Corso,
IEEE Transactions on Pattern Analysis and Machine Intelligence (coming)

"A Temporally-Aware Interpolation Network for Video Frame Inpainting" ,
Ximeng Sun, Ryan Szeto and Jason Corso, Asian Conference on Computer Vision, 2018

WORK EXPERIENCE

Research Intern, IBM Watson Health June 2019 - Nov 2019

Mentor: Rameswar Panda, Manager: Rogerio Feris.

AWARDS

2015 YUCHENG Scholarship(top 2%)
2015 Honorable Award, Mathematical Context in Modeling
2014 China Mobile Scholarship(top 2%)
2013 Excellent Student First-grade Scholarship (top 3%)
2013 Third Prize, Undergraduate Advanced Mathematics Contest, Beijing
2013 Third Prize, Undergraduate Advanced Mathematics Contest, BUPT