Tingfeng Li

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RESEARCH INTERESTS

My current research interests lie in zero-shot/few-shot learning (data-efficient learning with minimal supervision) and domain adaptation (quickly adapting to unforeseen environments with little indication), with their applications to computer vision problems, such as image classification and object detection, especially in real world scenarios.

EDUCATION

Rutgers University — **Piscataway, NJ, US**
Ph.D. Candidate in Computer Science — Expected Dec. 2022

- Advisor: Dimitris N. Metaxas, Distinguished Professor
- GPA: 4.0/4.0

Shanghai Jiao Tong University — **Shanghai, China**
M.E., Control Engineering — Sep. 2015 - Mar. 2018

- Master Thesis: "Subcategory-aware CNN for object detection and head pose estimation"

University of Electronic Science and Technology of China — **Chengdu, China**
B.E, Automation Engineering — Sep. 2011 - Jun. 2015

- Rank: 1/160, GPA: 3.93/4.0

WORK EXPERIENCE

Optical Networking+Sensing, NECLA — **Princeton, US**
Research Intern — Sep. 2021 - May 2022

- Weigh-In-Motion (WIM) using fiber-sensing waveform signal.
- Manhole open close event detection using fiber-sensing waterfall signal. **IR** submitted.
- Vehicle run-off-road events detection via SNAP waveform signal. **IR** in preparation.

Fashion Science, Amazon, — **Seattle, US**
Applied Scientist Intern — May 2021 - Aug. 2021

- Assisted develop labeling tool to created a benchmark dataset of online videos.
- Established and improved a baseline framework for fashion related video analysis.
- Proposed a new promising application for better customer experience.

Optical Networking+Sensing, NECLA — **Princeton, US**
Research Intern — May 2020 - Aug. 2020

- Developed a new approach using fiber-optic-sensing signal and machine learning techniques for vehicle run-off-road events detection to enhance roadway safety and efficiency. **IR** submitted and paper accepted in **OFC 2021**.

PUBLICATIONS

Tingfeng Li, Shaobo Han, Martin Renqiang Min, Dimitris Metaxas, *Learning Transferable Reward for Query Object Localization with Policy Adaptation,* The International Conference on Learning Representations (ICLR), 2022.

Tingfeng Li, Yuheng Chen, Ming-Fang Huang, Shaobo Han, Ting Wang, *Vehicle Run-Off-Road Event Automatic Detection by Fiber Sensing Technology,* Optical Fiber Communications Conference and Exhibition (OFC), 2021.

Zhiqiang Tang, Xi Peng, **Tingfeng Li**, Yizhe Zhu, Dimitris Metaxas, *AdaTransform: Adaptive Data Transformation,* The IEEE International Conference on Computer Vision (ICCV) oral, 2019.

Tingfeng Li, Xu Zhao, *Simultaneous Face Detection and Head Pose Estimation: A Fast and Unified Framework,* Asian Conference on Computer Vision (ACCV), 2018.

Tingfeng Li, Xu Zhao, *Cost Efficient Subcategory-aware CNN for Object Detection,* IEEE International Conference on Image Processing (ICIP), 2017.

INVENTION RECORDS

Vehicle Run-off-Road Event Detection via SNAP Waveform Signal. May 2022
(in preparation)

Temporal Relation Network for Manhole Open Close Event Detection Using DAS. Dec. 2021

Learning Ordinal Representations for Deep Reinforcement Learning based Object Localization. Mar. 2021

Distributed Intelligent SNAP Informatics System. Dec. 2020

PROJECT EXPERIENCE

Zero-shot Domain Adaptation for Object Localization Dec. 2021 - present

Develop an approach for object localization by generating a new model conditioned on domain descriptor. Paper in preparation for **BMVC 2022**.

Query Object Localization via Transferable Reward Jan. 2021 - May 2021

Proposed a reinforcement learning based approach for query object localization by learning transferable reward. This work is submitted as an **IR** and extended to a paper for **ICLR 2022**. In collaboration with **NEC Labs America.**

American Sign Language Recognition Dec. 2019 - May 2020

Developed a method to recognize American sign language via multi-scale temporal relational reasoning in videos. In collaboration with **Department of Linguistics, Boston University.**

Adaptive Data Transformation Sep. 2018 - Apr. 2019

Developed a method that learns data transformation automatically and efficiently with limited domain knowledge, which can increase data variance in training and decrease data variance in testing. Paper accepted in **ICCV 2019 oral**.

Car and Pedestrian Detection by Deep Learning Aug. 2016 - May 2017

Proposed an accurate and cost efficient deep CNN network for object detection, which can be used as an important part of automatic driving system. In collaboration with **2012 Labs, Huawei Technologies, China**.

Pedestrian Detection for Traffic Gestures Recognition Aug. 2016 - May 2017

Detecting the person with specific traffic gesture on the road by CNN. In collaboration with **BMW, ConnectedDrive Lab, China.**.

SOFTWARE

Query Object Localization with Policy Adaptation Author and Maintainer
American sign language recognition by TRN Author and Maintainer

TECHNICAL SKILLS

Languages : Python, Matlab, C++, C
Tools/Framework : Pytorch, TensorFlow, Caffe

AWARDS

- 2017 Outstanding Student Scholarship, SJTU, top 8 students of the grade
- 2015 Outstanding Undergraduates of UESTC
- 2013 National Scholarship, UESTC, top 2% among 160 students