GUANGYU SUN

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EDUCATION

University of Rochester *Aug. 2020 - May. 2022*
Master of Science in Computer Science. GPA: 3.95/4.0

University of Missouri-Columbia *Aug. 2017 - May. 2019*
Bachelor of Science in Computer Science. GPA: 3.65/4.0

Shandong University *Sep. 2015 - Jun. 2017*
Bachelor of Engineering in Computer Science and Technology. GPA: 4.13/5.0

PUBLICATIONS

Anomaly Crossing: A New Method for Video Anomaly Detection as Cross-domain Few-shot Learning
Guangyu Sun*, Zhang Liu*, Lianggong Wen, Jing Shi, Chenliang Xu. (* joint 1st authors)
arXiv, https://arxiv.org/abs/2112.06320

Deep Learning Detection of Inaccurate Smart Electricity Meters: A Case Study
Ming Liu*, Dongpeng Liu*, **Guangyu Sun**, Yi Zhao, Duolin Wang, Fangxing Liu, Xiang Fang, Qing He, Dong Xu. (* joint 1st authors)
IEEE Industrial Electronics Magazine (Volume: 14, Issue: 4, Dec. 2020)

Assessing Environmental Oil Spill Based on Fluorescence Images of Water Samples and Deep Learning
Dongpeng Liu*, Ming Liu*, **Guangyu Sun**, Zhiqian Zhou, Duolin Wang, Fei He, Jiaxin Li, Jiacheng Xie, Ryan Gettler, Eric Brunson, Jeffery Steevens, Dong Xu. (* joint 1st authors)
On submission.

RESEARCH EXPERIENCE

University of Rochester *Aug. 2020 - Now*
Research Assistant

- **Anomaly Crossing: A New Method for Video Anomaly Detection as Cross-domain Few-shot Learning**
  Negative samples are neglected in existing anomaly detection methods. To leverage these abnormal samples, we propose a new method to formulate the anomaly detection task as a cross-domain few-shot learning task. In this project, we...
  - Devised a new pipeline Anomaly Crossing applying self-supervised learning and contextual modeling as a baseline.
  - Achieved state-of-the-art on DoTA and UCF-Crime datasets.
  - (Under collaboration with Corning Inc.)
- **Anomaly Anticipation via Tracking-ViVit**
  Current typical transformer-based methods use patches as the tokens. Considering the position and feature of the objects provide crucial information for anomaly anticipation, we...
  - Built a spatio-temporal vision transformer leveraging tracklet for anomaly anticipation.
  - Explored the impacts of object tokens and tracklets in anomaly anticipation.
  - (Under collaboration with Corning Inc.)
- **Weakly Supervised Action Localization via Temporal Query Network and Differentiable Average Pooling**
  An event with a more salient boundary is intuitively easier to be classified. Under such an assumption, we...
  - Applied Temporal Query Network to predict the event boundaries.
  - Devised a novel differentiable average pooling layer to train the network in an end-to-end fashion.

Digital Biology Laboratory (DBL), University of Missouri-Columbia *Feb. 2018 - May 2020*
Undergraduate Research Assistant

- **Detection of Inaccurate Smart Electricity Meters Based on Deep Learning: A Case Study**
  Detecting inaccurate smart meters and targeting them for replacement can save significant resources. In this project, we...
  - Preprocessed and analysed the electricity-usage time series, stratied data to master-meter and sub-meter.
  - Built a LSTM for master-meter error prediction and a two-stream (1D-CNN+VGG16) model for sub-meter malfunction classification.
  - Integrated recurrence plot into VGG16 as additional phase information, improved classification accuracy by around 40%.
- **Assessing Environmental Oil Spill Based on Fluorescence Images of Water Samples and Deep Learning**
  Measuring oil concentration in the aquatic environment is important for determining the potential exposure, risk, or injury for oil spill response and natural resource damage assessment. In this project, we...
  - Analysed significance of features to handle our high-similarity and low-frequency image dataset (OilSS).
  - Implemented a binning method to calculate the confidence interval for estimations of ResNet and XGBoost.
  - Designed an enhanced histogram information extraction block with Attention (HAB) and integrated with ResNet. This auxiliary block improved model classification accuracy on both OilSS and CAFAR-10.
  - (Under collaboration with U.S. Geological Survey.)

University of Missouri-Columbia *Aug. 2018 - May 2019*
Undergraduate Student

- **Vehicle-mounted Objects Monitoring System**
  - Responsible for testing plan and agile methodology for this project.
  - Pre-processed the images including labeling the passengers, vehicles, signal lights and traffic signs in the images.
  - Designed a label tool by C++ based on OpenCV.
  - Implemented object detection by Yolo.

WORK EXPERIENCE

University of Rochester, Rochester, NY *Aug. 2021 - Dec. 2021*
Teaching Assistant
- Head TA for CSC 244/444: Knowledge Representation and Reasoning in AI.

Automat Solutions, Fremont, CA *Sep. 2020 - Now*
Machine Learning Engineer Intern (Remote)
- Designed and implemented electrolyte material generation model for optimal targets using Bayesian Optimization and Reinforcement Learning model (DDPG)
- Designed and implemented the database for generated recipes and experimental results.

AWARD

- **2nd place in TigerHacks2019 Developer Category**
- https://devpost.com/software/sigerson-the-artist

RELATED TECHNICAL SKILLS

Languages: Python, SQL, Java, C++, PHP **Technologies:** Pytorch, Tensorflow, Flask