Tianyu Sun

Contact Information

Computer Science
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Education

University of California, San Diego, San Diego, USA
- Visiting student, Computer Science **Sept. 2018 –**

National Taiwan University of Science and Technology, Taipei, Taiwan
- Exchange student, Computer Science GPA:4.12/4.3 **Feb. 2017 – June 2017**

University of Science and Technology Beijing, Beijing, China
- Bachelor, Computer Science GPA:86.4/100 **Aug. 2015 –**

Research Experience

National Laboratory of Pattern Recognition (NLPR)
Institute of Automation, Chinese Academy of Sciences (CASIA), Beijing, China
Research Intern, supervised by Prof. Liang Wang **June 2017 –**
- Segmented human parts of a large Person Re-ID dataset with more than a million images with DensePose. Extracted features of the images with ImageNet Pre-trained model. Applied graph convolutional networks to the features to accomplish state-of-the-art performance.
- Proposed a method [1] of increasing the performance of gait recognition by heightening the frame rate with generative adversarial networks, which achieved a classification accuracy comparable to state-of-the-art model with a 8-layer simple base model.

National Taiwan University of Science and Technology, Taipei, Taiwan
Undergrad Researcher in Machine Learning and Bioinformatics Laboratory, supervised by Prof. Hsing-Kuo Kenneth Pao **Mar. 2017 – June 2017**
- Wrote a demo which combined Gaussian Process Regression (GPR) and Generative Adversarial Networks (GAN) for predicting CO_2 level and achieved **2X** speed and **10X** accuracy than using GAN without GPR. Wrote another demo, which employed hierarchical sampling to boost the performance, to apply this model to traffic time series prediction.
- Surveyed active learning, analyzed how to get an accuracy as high as using the whole dataset with a selected small subset of original dataset.

University of Science and Technology Beijing, Beijing, China
Undergrad Researcher, supervised by Prof. Rui Wang **Nov. 2016 – June 2017**
- Wrote a survey about the existing incentive mechanisms for participatory sensing, which took about one hundred papers into consideration.
- Participated in designing a taxonomy of human types to boost Bayesian networks on predicting forwarding/sharing in social networks.

Ready to Submit

[1] **T. Sun**, C. Song, Y. Huang, and L. Wang, "Frame-GAN: Increasing The Frame Rate of Gait Videos with Generative Adversarial Networks" **Ready to Submit**.

Skills

- Frameworks and Data Analysis Libraries
  TensorFlow, PyTorch, OpenCV, Spark, Numpy, Scikit-learn, Pandas, Matplotlib
- Programming Languages
  Python, C++, C, JAVA, JavaScript, NodeJS, CSS, HTML

Selected Projects

Applying Pre-trained Model on Recognition
A demo which illustrates how to apply ImageNet pre-trained model on a custom dataset. We show how to apply ImageNet pre-trained model on a custom dataset with fine tuning. We achieved **2.7X** accuracy than random on a toy face recognition dataset with one-minute training on MacBook Air.

Tuning Tree Models with Gird Search
Analyze a dataset from Microsoft, which has 1804 features and 10868 records, with gradient boosting tree model and XGBoost model. We implemented gird searching for tuning the models.

Big Data Feature Selection with sk-learn
We get a dataset from Microsoft, which has 1804 features. We employ a random forest algorithm with 100000 decision trees and use cross-validation to decide which features are important. A ranking list of the importance of features is extracted and the top-10 features can be extracted for active learning.

Other Experience

ACM-ICPC Team@University of Science and Technology Beijing
Team Member, supervised by Prof. Yuan Hong **Nov. 2015 – June 2017**
- China Collegiate Computing Contest - Group Programming Ladder Tournament
  National Final Third Prize