

Curriculum Vitae

Xiaosong, Jia

Shanghai Jiao Tong University, China

Personal Page: jiaxiaosong.github.io

Cell: (+86) 1821-733-1698 · Email: jiaxiaosong@sjtu.edu.cn

EDUCATION

Shanghai Jiao Tong University (SJTU)

Shanghai, China

B.Eng. (Hons) Computer Science & Technology

Sept. 2016 - Jun. 2020 (expected)

GPA: **90.36**/100 (Rank: 6/95)

IEEE Honor Class: *elite undergraduate program of SJTU*

Zhiyuan Honor College: *students with high-level academic achievements (Top 5% in SJTU)*

University of California, Berkeley (UCB)

Berkeley, United States

Research Intern advised by Professor Masayoshi Tomizuka

Jul. 2019 - Sept. 2019

Topic: Extracting and interpreting drivers' interactive behavior based on machine learning methods

Oxford University

Oxford, United Kingdom

Oxford Prospects Programmes

Aug. 2018

RESEARCH EXPERIENCES

Unsupervised Classification for Drivers' Interactive Behaviors [C1] Jun. 2019 - Sep. 2019

Advisor: Professor Masayoshi Tomizuka

University of California, Berkeley

- Discovered explainable and separable patterns of drivers' interactive behaviors based on vehicles' trajectory by unsupervised learning
- Designed a framework to explicitly utilize the prior knowledge: different kinds of interactions have different influence on vehicles' motions
- Added three auxiliary tasks to provide supervised information related interactions and designed a combined loss function to solve the mode collapse problem

Generalizable Drivers' Interactive Pattern Learning

Jun. 2019 - Sep. 2019

Advisor: Professor Masayoshi Tomizuka

University of California, Berkeley

- Built a multi-task framework to jointly find out whether and when drivers are interacting based on vehicles' trajectory by supervised learning
- Proposed a series of task-specific preprocessing methods: window-based scaling, augmentation, and normalization so that the model could handle trajectories from different scenarios
- Proposed a new neural network block, Spatial-Temporal transformer, to fuse spatial and temporal information of multiple vehicles' motion
- Achieved 80% accuracy in single scenarios and achieved 20% accuracy improvement in absolute value when transferred to unseen scenarios

Sentiment Classification with Modeling of Users' Characteristics [C2] Feb. 2019 - Jun. 2019

Advisor: Professor Xiaofeng Gao

Shanghai Jiao Tong University

- Extracted people's characteristics from their historical texts and then classify the sentiment attitude of people's latest text based on their characteristics.
- Adopted SenticNet and multiple sentiment lexicons as prior domain knowledge to extract users' interests and temperaments from texts
- Designed memory mechanisms to capture temporal dynamics of people's characteristics and captured different natures of people's interests and temperaments by different forgetting-storing strategies and attention mechanisms
- Stably achieved 1% improvements in the sentiment classification accuracy of several baseline methods on several Amazon datasets and ablation studies showed the effectiveness of each module

Hot Topic Detection on Early Stage by Survival Theory [J1]

Aug. 2018 - Dec. 2018

Advisor: Professor Xiaofeng Gao

Shanghai Jiao Tong University

- Detected potential hot topics on social media only based on early-stage data of posts and adopted Cox's model, a classic model of survival theory in biological statistics field, by treating posts as 'patients' and hot topics as 'events'.

- Proposed a dynamic threshold based on prior Gaussian distribution assumption of survival probability and derived first-order patterns of sequences from derivatives of Cox's model
- Achieved better performances in terms of k-coverage, time-head, and sensitive cost compared to several state-of-the-art methods

SELECTED PROJECTS

Paper Recommender System Based on Deep Reinforcement Learning Apr. 2019 - Jun. 2019

- Built a paper recommender system for Acemap site and achieved better performance in terms of rewards compared to baseline policy
- Extracted papers' content and connection embedding based on BERT and deepwalk/node2vec respectively
- Formulated the recommending problem into reinforcement learning form and proposed an offline simulation method
- Adopted Rainbow-DQN for this task and used noisy-net and attention mechanism in Q-network

Explorations for Understanding of CNN

Apr. 2019 - Jun. 2019

- Understand how CNN works and why by using visualizations methods including Grad-CAM, Guided-BP, and their extensions on CIFAR-10 and CUB2011-200 datasets by Alexnet, VGG16, and Resnets-50
- Summarized and validated some facts about filters' patterns of different models, filters' patterns of different layers, how overfitting may happen, attentive heat maps of different models

Stock Price Prediction

2018 Oct. - Dec. 2018

- Predicted price of a stock with limited order book data and achieved 0.0124 RMSE on private board (rank 1/89 on Kaggle in course competition)
- Cleaned missing/wrong data and completed feature engineering by domain knowledge and automatic techniques
- Designed relative features and goals to deal with unseen price problem
- Ensemble models including LSTM, CNN+LSTM, Xgboost, Linear Regression, etc

PUBLICATIONS

[C1] Who do you care? Extracting interactive patterns in driving behaviors via unsupervised learning

Xiaosong Jia, Liting Sun, Wei Zhan, Masayoshi Tomizuka

Under review of *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.

[C2] SentiMem: Attentive Memory Networks for Sentiment Classification in User Review

Xiaosong Jia, Qitian Wu, Xiaofeng Gao, Guihai Chen

Submitted to *Conference on Database Systems for Advanced Applications (DASFAA)*, 2020.

[J1] Using Survival Theory in Early Pattern Detection for Viral Cascades

Xiaofeng Gao, **Xiaosong Jia**, Chaoqi Yang, Guihai Chen

Under Major Revision of *IEEE Transactions on Knowledge and Data Engineering Journal (TKDE)*.

AWARDS & SCHOLARSHIP

Meritorious Winner of Interdisciplinary Contest In Modeling (top 8.8%) Apr. 2018

Excellent All-round Student (top 10%) 2017&2018

Academic Excellence Scholarship (top 5%) 2017&2018&2019

Scholarship of Huawei (top 5%) 2018

Scholarship for Oxford Prospects Program (\$5400+ 15 students in SJTU each year) 2018

Scholarship of 1985 Alumni (top 5%) 2019

Scholarship of Zhiyuan Honor College (top 5%) 2017&2018&2019

ACADEMIC SERVICE

International Conference on Database Systems for Advanced Applications (DASFAA) 2019, Reviewer

IEEE Transactions on Knowledge and Data Engineering Journal (TKDE), Reviewer

ACM Turing Celebration Conference (ACM TURC) 2018, Volunteer

ACM Turing Celebration Conference (ACM TURC) 2017, Volunteer