Shanchao **Yang**

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Education

Xidian University *Sept. 2017 – Jun. 2020*

Master in Computer Science

- GPA: 3.8/4.0

Xidian University *Aug. 2013 – Jul. 2017*

Bachelor in Intelligent Science and Technology

- GPA: 3.8/4.0 Ranking: 1/144

Research Experiences

IPIU Lab, Xidian University *Aug. 2019 – Jan. 2020*

Student Researcher at IPIU Lab, advised by Prof. Jing Liu

- *Topic*: **Conditioned graph generation from time series with GANs and graph convolutionary network**
- Learned a distance function to compare graphs and time series in the hidden space via GCN and RNN
- Overcame the shortcoming of current algorithms relying the loss in the time series space to measure the correctness of optimized graph.
- Adopted MLP as the generator of GANs; GCN for graphs and RNN for time series together as the discriminator
- Generated diverse graphs that match the structural characteristics of the training time series data

IPIU Lab, Xidian University *May. 2018 – Jul. 2019*

Student Researcher at IPIU Lab, advised by Prof. Jing Liu

- *Topic*: **Reinforcement learning and graph convolutionary network for robust graph network generation**
- Generated the graph features based on graph convolutionary network
- Formulated the robust graph generation problem as a Markov Decision Process
- Guided the robust graph generation process by the trained reinforcement learning agent
- Implemented the algorithm on various deep reinforcement learning platforms (Tensorflow and Pytorch)

IPIU Lab, Xidian University *Aug. 2017 – May. 2018*

Student Researcher at IPIU Lab, advised by Prof. Jing Liu

- *Topic*: **Time series forecasting method based on wavelet transform and fuzzy cognitive maps**
- Transformed the univariate time series into multi-variate time series based on wavelet transform
- Designed and implemented a fast fuzzy cognitive maps learning algorithm based on ridge regression
- Modeled and predicted time series using the learned fuzzy cognitive maps
- Achieved state-of-the-art forecasting performance on a wide range of datasets, including both stationary and non-stationary time series.

Publications

Time-Series Forecasting Based on High-Order Fuzzy Cognitive Maps and Wavelet Transform *IEEE TRANS. ON FUZZY SYSTEMS*

Shanchao Yang, Jing Liu

Learn to Generate Time Series Conditioned Graphs with Generative Adversarial Nets *arXiv:2003.01436*

Shanchao Yang, Jing Liu, Kai Wu, Mingming Li

Time Series Prediction Using Sparse Autoencoder and High-order Fuzzy Cognitive Maps *IEEE TRANS. ON FUZZY SYSTEMS*

Kai Wu, Jing Liu, Penghui Liu and **Shanchao Yang**

Highlighted Projects

Wavelet-HFCM : Complex Network Model for Time Series Prediction (Link) *Aug. 2017 – May. 2018*

Wavelet-HFCM is a hybrid model based on fuzzy logic and complex networks for time series prediction, achieving comparative prediction results on both stationary and non-stationary time series.

Document-Classification : Classify Documents Based on SVM and TF-IDF (Link) *Mar. 2017 – Jun. 2017*

Document-Classification is a model to classify news and documents based on SVM and TF-IDF, giving a result about 81.40 % (6109 / 7505) in accuracy.

GEP : Genetic Expression Programming for Modeling Time Series **(Link)** *Jan. 2017 – Mar. 2017*

GEP is a branch of evolutionary algorithm for modeling time series, which can automatically search for the best model representing the data patterns, similar to current popular neural architecture search (NES) research in deep learning.

Honors & Awards

Jan. 2019 CASC Scholarship **(Top 1%)**
Nov. 2018 National Scholarship **(Top 3%)**
Nov. 2017 The first class Scholarship of Xidian University **(Top 4%)**
May. 2016 **Meritorious Winner**, The Interdisciplinary Contest in Modeling (ICM)
Nov. 2016 National Scholarship **(Top 1%)**
Nov. 2015 The first class Scholarship of Xidian University **(Top 4%)**
Nov. 2014 The first class Scholarship of Xidian University **(Top 4%)**