

# Yihong “Jonathan” Ma

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## CONTACT INFORMATION

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## EDUCATION

**Shanghai University of Finance and Economics** **Shanghai, China**  
*Bachelor of Economics in Finance (GPA: 3.55/4)* *Sept. 2016 - Present*

- Relevant Courses: Computer Organization (in progress), Computer Programming, The Principle of Data Base, Financial Data Analysis, Mathematical Analysis, Mathematical Statistics, Probability Theory, Linear Algebra

**University of Notre Dame** **Notre Dame, IN**  
*Visiting Undergraduate (GPA: 4/4)* *Aug. 2018 - May 2019*

- Relevant Courses: Design/Analysis of Algorithms, Data Structures, Stochastic Processes, Differential Equations, Data Science, Data Analysis with Python, Statistical Methods in Data Analysis
- Advisor: Prof. Meng Jiang, Prof. Chaoli Wang and Prof. Daniele Schiavazzi

## PUBLICATIONS

[C2] Jun Han, Yunhao Xing, **Yihong Ma**, Hao Zheng, Chaoli Wang. “V2V: Variable-to-Variable Translation for Multivariate Time-Varying Data with Sparsely Aggregated Convolutional Neural Nets.” **under review** at *IEEE Pacific Visualization Symposium (Pacific Vis)*, 2020.

[C1] Daheng Wang, Zhihan Zhang, **Yihong Ma**, Tong Zhao, Tianwen Jiang, Nitesh Chawla, Meng Jiang. “Evolutionary Graph Neural Networks.” **under review** at *AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

[W1] **Yihong Ma**, Qingkai Zeng, Tianwen Jiang, Liang Cai, Meng Jiang. “A Study of Person Entity Extraction and Profiling from Classical Chinese Historiography.” *International Workshop on Entity REtrieval (EYRE)* at *ACM International Conference on Information and Knowledge Management (CIKM)*, 2019.

## RESEARCH EXPERIENCE

**Person Entity Extraction and Profile Construction in Classical Chinese Historiography** *May 2019 - Aug. 2019*

*Advisor: Prof. Meng Jiang*

*DM2 Lab, University of Notre Dame*

Constructed an unsupervised framework to generate profiles for historical figures by extracting person entities and their biographical information from a set of classical Chinese historiography:

- Developed a Bootstrapping algorithm based on textual patterns to iteratively discover new knowledge while handling semantic drift by designing appropriate ranking functions for both patterns and corresponding extractions
- Pre-trained the Character Embedding via Word2vec on the corpus of Orthodox Histories
- Adapted the Bi-LSTM CRF in PyTorch for the task of Named Entity Recognition (NER) in the domain of classical Chinese

**Node Embedding Learning in Academic Publication Graph via Evolutionary Graph Neural Networks** *May 2019 - Aug. 2019*

*Advisor: Prof. Meng Jiang*

*DM2 Lab, University of Notre Dame*

Built a framework of evolutionary graph neural networks to generate node embedding

series from the seen graph series, preserve the impact of temporally early graphs on the current graph:

- Worked with Microsoft Academic Graph data (~100G)
- Mined information from a publication graph, where each node represents an author and each edge indicates the co-authorship in one paper between two authors
- Web scraped the citations-per-year data of a total of 1,928 author nodes in the publication graph from Google Scholar

### **Variable-to-Variable Translation for Multivariate Time-Varying Data Using Deep Learning**

*Apr. 2019 - Present*

*Advisor: Prof. Chaoli Wang*

*University of Notre Dame*

Designed a novel deep learning framework as a general-purpose solution to the variable-to-variable translation problem for multivariate time-varying data (MTVD) analysis and visualization:

- Adapted the Pixel-to-Pixel (2D) CycleGAN for Voxel-to-Voxel (3D) translation as one of the baseline models using PyTorch
- Conducted exhaustive experiments to compare the performance of the proposed model and 3 baseline models on 4 scientific simulation data set (i.e., combustion, ionization, climate and combustion maps)
- Rendered and analyzed the generated scientific simulation data via ParaView, an open-source data analysis and visualization application

### **Multi-resolution Approximation and Wavelets in the Analysis of Financial Data**

*Aug. 2018 - May 2019*

*Advisor: Prof. Daniele Schiavazz*

*University of Notre Dame*

Constructed a model for predicting stock prices, leveraging algorithms in wavelets analysis and machine learning:

- Reproduced the Fast Wavelet Transform (FWT) algorithm by Mallat to compute the wavelet transform coefficients of S&P Index data for period 2002-2014
- Leveraged the Steins Unbiased Risk Estimate (SURE) algorithm to threshold the wavelets coefficients for denoising
- Predicted the tendencies (whether going up or down in the next time stamp) of S&P Index using the combination of Wavelet Transforms and Deep Neural Network, achieving an accuracy of 60.71% in backtesting

**PROFESSIONAL EXPERIENCE** **Ping An Insurance (Group) Company of China, Ltd.**

**Shanghai, China**

*Assistant Algorithms Engineer, Knowledge Graph Group*

*Incoming Sept. 2019*

### **SKILLS**

**Programming Languages:** Python, C++, R, MATLAB and L<sup>A</sup>T<sub>E</sub>X

**Frameworks:** PyTorch, Keras, Sklearn, Numpy, Pandas, Gensim and etc.