JUNTAO WANG

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EDUCATION

The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen)   Shenzhen, China

Candidate for B.S. in Statistics (Stream: Data Science)   Sept. 2018 – June 2022 (Expected)

- **Core Courses:** Gaussian Process for Machine Learning & Signal Processing (**Graduate level**), Regression Analysis, Techniques for Data Mining, Probability and Statistics, Discrete Mathematics, Statistics Software, Programming Paradigms, etc.
  - **Technique skills:** Python (proficient, especially with PyTorch, OpenCV-Python, GPyTorch, etc.), MATLAB (proficient, with GPML Toolbox), C++ (proficient), R (proficient), LaTeX (proficient), MySQL (basic), Julia (basic)

- **Awards:** Bowen Admission Scholarship, Dean's List Honor for 2019-2020 & 2020-2021, Undergraduate Research Award

RESEARCH EXPERIENCE

Graph Neural Network for Large-Scale Network Localization   Shenzhen, China

Co-author, Research Project of Ph.D. student Mr. Wenzhong YAN   Sept. 2021 – Now

- **Reviewed**, **summarized** and **analyzed** mainstream Graph Neural Networks models (e.g., GCN, GraphSAGE, GAN, etc.)
- **Conducted** the experimental result part to test the performance of baseline models on our formulating problem scenario; **identified** the problems in the simulation experiments; **created** some ideas to solve the latent problems in our model
- **Imagined** more applicable scenarios of our formulating problem; **gathered** and **reviewed** relevant literatures
  - *Output: Experiment code, 1 academic report slide; 1 research paper (in progress)*

Prediction of Wireless Network Traffic in High-Dimensional Beam Space   Shenzhen, China

Research Assistant, Joint Research Project of CUHK-Shenzhen & SRIBD & HUAWEI Innovation Laboratory for   Sept. 2020 – Now
Future Network Systems Optimization led by Prof. Tom LUO & Prof. Feng YIN & Dr. Qi WANG

- **Processed** project data; **investigated** various deep learning algorithm (e.g., RNN, LSTM, Transformer, Prophet, etc.) and research progress in relevant fields; **constructed** writing framework and **coordinated** group members to write reports
- **Reproduced** LSTM model and Prophet model via PyTorch for our problem scenario; **constructed** LSTM-PageRank model for spatiotemporal prediction problem; **proposed** Multi-LSTM Attention model for complicated time series prediction; **tested** and **optimized** the performance of LSTM, Prophet, LSTM-PageRank and Multi-LSTM-Attention models
- **Cooperated** with group members specializing in Gaussian Process model to complete the task of time series prediction; **assisted** group members specializing in Graph Neural Network in the research of spatiotemporal prediction models (e.g., LSTM-GCN, Conv-LSTM, etc.)
  - *Output: Project code, 2 report slides, 4 progress reports; 1 patent (pending), 1 research paper (in progress)*

WORK EXPERIENCE

HUAWEI Technologies Co., Ltd., Desktop & Smart Office Accessories Development Dept.   Dongguan, China

*Internship of Intelligent Manufacturing and Precision Manufacturing R&D Engineer, **Product & Solution Test***   July 2021 – Sept. 2021

- **Participated** in the development of HUAWEI's first printer product PixLab X1; **involved** in the testing and improving work of printing effects (far exceeds compatible products at the final release)
- **Developed** an automatic detection of printing effects testing tool (including image processing via OpenCV-Python, GUI development via Tkinter, ML Algorithm, etc.) to make the detection on the production line more efficient and precise
- **Utilized** the tool to figure out printing effect defects and **assisted** development group to solve these issues; **managed** the deployment of the detecting tool on the production line
- **Learned** and **researched** image processing algorithms and **taught** them to other group members; **extracted** the main points of an international standard of printing effects and **translated** them into Chinese for the whole group to read; **appraised** for **The Best**

Intern Award after 3 rounds of assessment
- ■ *Output: Tool code, 2 product testing reports; 1 Industry Standards (in process)*

PROJECT EXPERIENCE

A Graph Prediction Model Based on LSTM and Personalized PageRank: LSTM-PageRank Shenzhen, China
Team Leader, Course Project of Web Analytics and Intelligence Apr. 2021 – May 2021
- **Assigned** tasks to teammates and **coordinated** them to do numerical experiments and write project repot; **handled** the whole progress of our project; **summarized** and **analyzed** the experiment results; **presented** our project in class
- **Proposed** our model LSTM-PageRank combining LSTM (what I was familiar) with PageRank (what I newly learned in class) and Personalized Propagation of Neural Prediction (what I reviewed in others' research)
- **Formulated** our research problem; **designed** the simulation experiment and evaluation mechanism; **constructed** benchmark models and LSTM-PageRank model via PyTorch; **assisted** teammates to solve issues arising in experiments
  - ■ *Output: author of the project code; co-author of 1 project report and 1 presentation slide*

Electricity Load Prediction via LSTM: an Exploration of Predictability and Granularity Shenzhen, China
Team Leader, Course Project of Techniques for Data Mining Apr. 2021 – May 2021
- **Processed** the Pecan electricity load dataset; **set** goals of our project and distributed subtasks to group members; **reviewed** relevant literatures and **identified** the main problem to explore; **presented** our project in class
- **Constructed** LSTM model and **implemented** the numerical experiments; **collaborated** with teammates to compare Deep Learning model with traditional Machine Learning models (e.g., Multi-Layer Perceptron, Decision Tree, etc.)
- **Conducted** experiments to explore the relation of predictability and granularity of time series; **verified** the theorical results in research of <u>Wu et al.</u> with our experimental results
  - ■ *Output: co-author of the project code, 1 project report and 1 presentation slide*

EXTRA-CURRICULAR ACTIVITIES

The CUHK-Shenzhen Student Ambassador Group Committee Shenzhen, China
Vice Chairman Sept. 2019 – Sept. 2020
- **Coordinated** departments of the Student Ambassador Group to organize **3** seminars involving a total of more than **2,000** participants; with individual responsibilities of volunteer scheduling and reception of participants
- **Organized 3** "Thanksgiving Alma Mater" activities involving more than **200** high schools and **mobilized** more than **1,800** students; with personal responsibilities of pre-planning, on-site coordination and post-event feedback

The Hult Prize Greater Bay Area Innovation Challenge Shenzhen, China
Team Leader, The 1st Runner-Up May 2019
- **Developed** an innovative profitable business plan with the theme of accessible travel and the aim of public welfare within **2** days; **competed** with **25** universities from the Greater Bay Area, and finally **won the 1st runner-up and start-up foundation**
- **Arranged** tasks to teammates and **handled** the overall progress; with personal responsibilities of the data processing (**completed** the collection and collation of thousands of data within **6** hours) of business surveys in related fields

PUBLICATION

PATENT	1.	Feng Yin, Wenzhong Yan, ***Juntao Wang**, Zhiquan (Tom) Luo, "A Spatio-temporal Prediction Method for High-Dimensional Beam Space Wireless Network Traffic", *pending for patent office approval*, Sept. 2021
PAPER	1.	Wenzhong Yan, ***Juntao Wang**, Feng Yin, "Graph Neural Network for Large-scale Network Localization", *in progress*, Dec. 2021
	2.	Yijue Dai, Wenzhong Yan, ***Juntao Wang**, Xinyi Zhang, Feng Yin, "Stacking Model for High-Dimensional Beam Space Wireless Network Traffic Prediction: Multi-LSTM-GP Attention with GAN", *in process*, Nov. 2021