Zuokun OUYANG Ph.D. Candidate

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zuokun-ouyang

Research Interests

I am interested in Machine Learning and Data Mining for Time Series Analysis and Forecasting. My current researches include:

- Multivariate time series forecasting
- Deep sequential & temporal models and time series modeling
- Statistical and dynamic time series analysis and regression

Education

University of Orléans Orléans, France

Ph.D. Candidate in Computer Science *Oct. 2019 – Present*
Dissertation: *Prediction of multivariate time series to accompany the activity of a franchise network positioned on the repair and maintenance of roofs*
Advisors: Assoc. Prof. Philippe Ravier, Assoc. Prof. Meryem Jabloun
Funding: This research was funded by ANRT (Association Nationale de la Recherche et de la Technologie) CIFRE *N°* 2019/0551 contracted with ATTILA Gestion

University of Orléans Orléans, France

Master of Science in Computer Science *Sept. 2017 – June 2018*

Ecole Polytechnique of University of Orléans Orléans, France

Ingénieur Diplômé in Computer Engineering *Sept. 2015 – June 2018*

Beijing Institute of Technology Beijing, China

Bachelor of Engineering in Electronics & Information Engineering *Sept. 2012 – June 2016*

Professional Experience

ATTILA Gestion Lyon, France
Machine Learning Engineer and Data Analyst *Oct. 2019 – Present*

- Used Power BI and Excel to identify, extract, and analyze different internal indicators of multiple franchise agencies.
- Used R, Python, and PyTorch to build multistep forecasting models for multivariate time series on enterprise data and standard datasets.
- Performed client segmentation using both traditional and time series clustering methods.
- Designed pipelines to evaluate the performance of different time series forecasting models.

ATTILA Gestion Montargis, France
Data Analyst Intern *Apr. 2018 – Sept. 2018*

- Used Excel and internal tools to analyze indicators of multiple franchise agencies.
- Literature study of statistical and machine learning models for time series analysis and forecasting.
- Compared and evaluated the performance of statistical, machine learning, and deep learning models for time series forecasting tasks.

eContent Store Sàrl Luxembourg
Software Development Engineer Intern *June 2017 – Aug. 2017*

- Acted as one of the core developers of the Android development team.
- Implemented major features and improvements for our AR product, including better technology selection, natural features training pipeline, and many bug fixes.
- Responsible for the development of a user-end WebGL tool for natural features training to benefit rendering.

Scientific Knowledge

Programming Python, R, Java, C/C++, C#, Swift, Matlab
Frameworks/tools PyTorch, scikit-learn, Unity Engine, OpenCV, PowerBI, Linux, Git
Math Machine Learning/Deep Learning, Data Mining, Time Series Analysis, Calculus, Linear Algebra, Probabilities and Statistics, Optimization Theory
Languages English (TOEIC/855, proficient), French (TCF/B2, upper-intermediate), Mandarin (mother tongue)

Selected Publications

1. Z. Ouyang, P. Ravier, and M. Jabloun, "A Comparison Study of Deep Learning Models Combined with Multistep Time Series Forecasting Strategies," Submitted to ITISE 2022, Abstract Paper.
2. Z. Ouyang, P. Ravier, and M. Jabloun, "Are Deep Learning Models Practically Good as Promised? A Strategical Comparison of Deep Learning Models for Time Series Forecasting," Submitted to EUSIPCO 2022, Full Paper.
3. Z. Ouyang, P. Ravier, and M. Jabloun, "Une comparaison des modèles d'apprentissage profond combinés avec des différentes stratégies pour la prédiction multi-étape des séries temporelles," Submitted to GRETSI 2022, Full Paper.
4. Z. Ouyang, P. Ravier, and M. Jabloun, "STL Decomposition of Time Series Can Benefit Forecasting Done by Statistical Methods but Not by Machine Learning Ones," *Engineering Proceedings*, vol. 5, no. 1, p. 42, 2021. DOI: 10.3390/engproc2021005042, Full Paper.

Selected Projects

iOS application *RestauRank* Orléans, France
iOS Development project *Mar. 2018 – Apr. 2018*

- Developed a map application to discover the best restaurants nearby and the fastest route.
- Google Maps SDK for map display and navigation and Google Geolocation API for rating info.
- Pure Swift for the implementation.

Archaeological ceramic decoration segmentation by CNN Orléans, France
Deep Learning Project *Jan. 2018 – Mar. 2018*

- Built 2D FCN to segment decorated regions of ancient ceramic shards from their depth maps.
- Clustered the FCN-segmented regions and the preprocessed depth maps into different classes.
- Evaluated the clustering results with other algorithms such as k-means and DBSCAN.

Sound localization system on microphone array Orléans, France
Graduation project for Beijing Institute of Technology *Mar. 2016 – May 2016*

- Developed a microphone array system to detect the location of a sound source in 2D space with a Raspberry Pi 3B, an Arduino UNO Rev3, a stepper motor, and an eight-microphone array.
- Implemented DOA-TDOA & GCC algorithms. Developed in MATLAB and Python.

Talks

- STL Decomposition of Time Series Can Benefit Forecasting Done by Statistical Methods but Not by Machine Learning Ones, *7th International conference on Time Series and Forecasting*, Gran Canaria, Spain, July 2021.
- Use Time Series Prediction Methods to Forecast Customers Number, *1st Collaborative Workshop on Artificial Intelligence Applications for Small Medium Enterprises*, Orléans, France, June 2018.

Awards

- College Student Academic Scholarship, 4 times, Beijing Institute of Technology *2012 – 2015*
- 3rd Prize, Chinese Joint Exhibition of Painting and Calligraphy for College Students *2013*
- National 3rd Prize, The 25th Chinese Chemistry Olympiad *2011*
- Provincial 1st Prize, The 28th Chinese Physics Olympiad *2011*
- Provincial 1st Prize, The 20th China High School Biology Olympiad *2011*

Other Experience

- Chinese New Year Celebrations Volunteer, *Orléans and Yangzhou Government* *Feb. 2017*
- Vice President, *Association of Calligraphy of Beijing Institute of Technology* *2013 – 2015*

Hobbies

Basketball, Reading, Chinese Calligraphy, Singing, Fitness.