Pingcheng Zhang

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PROFILE

I'm currently a final year master student in software technology in the Department of Computing. I previously obtained master's and bachelor' degree in Urban Planning. My research interest mainly lies in data-driven decision support systems, urban modeling and graph-based event state prediction. My long-term goal is to work in the interdisciplinary field of urban planning and computing, and working on an original theory that help designing a data-driven and programmable interface between human and city, as an alternative to the traditional planning paradigm.

EDUCATION

The Hong Kong Polytechnic University, M.S. in Software Technology	2017.9 - 2019.3 (Expected)
South China University of Technology, M.E. in Urban Planning.	2014.9 - 2017.6
South China University of Technology, B.E. in Urban Planning.	2009.9 - 2014.6

RESEARCH

An Alternative Method of Bipartite Network Projection for Cities' Connection of Produce Service in China (AGC conference paper)

Examining the Density and Diversity of Human Activity in the Built Environment: The Case of the Pearl River Delta, China (Journal of Urban Technology, submitted)

A complementary algorithm of bipartite network projection for cities' connection of producer services in China (The Annals of Regional Science, submitted)

Multi-source Data Based Space Structure Analysis of Guangzhou Central Urban Districts (Dissertation of master's degree in urban planning)

Coauthor of Patent: Assisted planning and site selection method for network optimization based on space syntax (CN201510532064)

Coauthor of Patent: Construction land bearing efficiency measuring method based on data mining (CN201510047806)

EXPERIENCE

PINGAN Technology, Data Mining Engineer Intern.   03/2018 - 05/2018

Worked as a data mining engineer and server-side developer in a AI-Lawyer project. The project parse legal judgment documents to extract key information and transforms such information into vector, which is used to predict compensation amount and winning ratio of a lawsuit. Responsible for developing modules to automatically parse and extract data from legal judgment documents and import them to relational database efficiently after cleansing and preprocessing. The project extensively uses Numpy and Pandas.

GZPI, Data Analyst   2016.3 - 2016.5

Worked as a data analyst and intern urban planner in an interdisciplinary team consists of programmers and urban planners as well as landscape architects at Urban Planning Research Centre of Guangzhou Urban Planning & Design Survey Research Institute (GZPI). Mainly contributed as a data analyst using ArcGIS to do spatial analysis and visualization tool such as Tableau to help clarify the proposal to decision makers of the urban renewal project. Wrote a report on application of drone-aided field survey and illegal construction detection in built area, which is used in the fund application for procurement of drones of the department.

SCUT, Teaching Assistant.   2015.9 - 2016.1

Served as teaching assistant in the Department of Architecture at South China University of Technology for a semester from fall 2015, assisting the professor with instructing urban planning courses and urban design studios as well as organizing research seminars and recitations for undergraduate students.

SCUT, Research Assistant   2014.9 - 2015.8

Worded with my tutor Prof. Zhao Miaoxi as a research assistant in the field of quantified urban research and projects at South China University of Technology. Deeply participated in projects in rural-urban connectivity network, data-driven decision making and spatiotemporal data-based urban functional structure analysis.

SKILLS

Quantitative Research

Comfortable with working under basic mathematical context in research, have undergraduate level maturity in calculus, linear algebra, probability and statistics. Refined the Shannon Wiener index to better approximate within the context of land use mix in bachelor thesis.

Data Analytics

Familiar with data mining, machine learning algorithms and feature engineering. Experience in using data analytics tools and libraries such as R, SPSS, scikit-learn, Tableau, NumPy and Pandas in research and projects. Familiar with deep learning algorithms and implementation in PyTorch framework. Familiar with relational database management and development. Have experience working with spatial database and PostGIS extender.

Programming

A Python programmer of 3-year-experience, capable of doing web development using frameworks (such as Django and Flask) and data science programming. (NumPy, Pandas, etc.) Have basic experience in front-end development. (HTML & CSS, JavaScript) Familiar with data extraction and web crawling. Limited experience in C/C++ programming.

Academical Writing

Have sufficient academical writing experience during my past and current study period, both in Chinese and English. Writer of a column on zhihu.com(Chinese version of Quora) with couple of hundred of subscribers, which discuss topics in the interdisciplinary field of urban planning and computer/data science.

Language

Able to communicate fluently in English, TOEFL 108 (writing 28/30, speaking 26/30).

Limited working proficiency in Japanese, elementary proficiency in Korean. Native speaker of Chinese, fluent in Cantonese.

PROJECTS

Software/Data Science Projects

• **Bike-sharing Pattern Prediction**

A machine learning project implementing neural network with Python and NumPy. Defined and trained a multi-layer neural network and used it to analyze bike-sharing data to detect patterns of shared bike usage in urban areas, i.e. to predict the number of bike-share users on a given day based on various given input informations.

• **Time Series Prediction**

Implemented Recurrent Networks and Long Short-Term Memory Networks with TensorFlow to predict time series pattern using stock market price data. This methodology is adapted and combined into my current thesis work on predicting traffic status.

• **Distributed Query System**

Implemented a dual-server balance query service system (three-tiered architecture) using gRPC distributed system framework, with a simple web application as client and call the methods of server side using back-end methods of the web application. This application supports data synchronization and fail recovery between two servers.

• **Social Network Data Retrieval**

Built a web crawler in Python to gather social network user information such as douban.com and zhihu.com for further social network analysis. The crawler can be distributed on several hosts and combine their result using a simple message passing synchronization mechanism. This system is used to collect data for my master thesis in urban planning.

- **Kaggle Data Mining Contest**

A kaggle data mining contest on revealing the key factors that cause an employee to quit his/her job. Performed data preprocessing and cleaning techniques using NumPy and Pandas, then used scikit-learn to experiment machine learning models to find out most significant features.

- **GRE Vocabulary Builder**

A website written in Python Django framework as backend and Bootstrap as frontend framework. The idea is to use a database to track user error on words and adjust the push frequency accordingly.

- **Microsoft Blockchain Workshop**

A workshop held by Microsoft. Built a workable private Ethereum blockchain network using solidity language. The application built upon the blockchain is a basic transaction system.

Urban Planning Projects

- **Full coverage planning of Pearl River Delta, Guangdong, China**

A regional planning project announced by the Guangdong government and cooperated between several urban planning institutes in China. Worked under my tutor and participated in the part of spatial quality promotion of urban area of pearl river delta utilizing big data analysis method. Mainly served as a GIS data administrator and did extensive spatial analysis regarding city connection of the Pearl River Delta between rest of China and world using ArcGIS.

- **Sihui City Comprehensive Planning Big Data Monographic Study**

A project which is a commission of the government of Sihui City. Contributed as an implementer of a village merging algorithm and developed computational application for choosing traveling route involving most interested sites according to search result.

- **UC Berkeley Winter Workshop**

A workshop hold by SCUT and UC Berkeley. Participated as a leader of a four-people transportation team. Mainly focused on transportation issues of Pazhou International Convention Center area and provided a full coverage transportation plan to solve traffic dilemma of the site.

- **Comprehensive Planning of Wuning City(2014-2030)**

A comprehensive planning amendment project of Wuning city, a small city of population roughly around 100 thousand. Participated in two parts: First part is spatial structure extension design, land use modification and update of FAR. The other part is city connection network analysis of Wuning using business data. Both part involves intensive use of ArcGIS and also ArchPy extension coding.