ZHIGE XIN

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Specialties

Social Network Analysis and Machine Learning

Education

Ph.D. Candidate, Computer Science
University of California, Davis, CA 9/2010 - present

M.S., Computer Science
University of California, Davis, CA 9/2010 - 12/2012

M.S., Computer Application Technology
University of Science and Technology, Beijing, China 9/2007 - 1/2010

B.S., Computer Science & Engineering
Henan Polytechnic University, Henan, China 9/2001 - 6/2005

Skills

Programming Languages: C/C++, Java, Python, Perl, SQL, R, Matlab, HTML, XML, LaTeX

Operating Systems: Linux, Mac OS, Windows

Others: MySQL, PostgreSQL, Hadoop, Git, Docker, Heroku, Flask, REST/HTTP

Research Experience

Research Assistant, Computer Science Dept., UC Davis 9/2010 - present

- Proposed and implemented a community detection method in Facebook pages via multi-view learning in **Python**.
- Incorporated the communicability measurement into spectral modularity optimization for exploring community structure in social networks in **Matlab**.

Software Developer, Communication Dept., UC Davis 9/2011 - 3/2012

- Developed an iterative method to extract traffic and audience metrics from **top 100,000** websites using Amazon Web Service API in **Perl**.
- Processed collected top websites data into manageable Excel files via hash-table.

Algorithm Designer, KDD Lab, Univ. of Sci. and Tech. Beijing 9/2007 - 1/2010

- Co-designed a fast protein sequence alignment algorithm based on dynamic programming in **Java**.
- Developed an **artificial neural network** that can predict homologous protein sequences with **greater than 80% accuracy** in **C++**.

Work Experience

Software Engineering Intern, Electronics Research Lab, Volkswagen Group of America. 6/2016 - 12/2016

- Co-designed and implemented an intent manager module to provide driver with intents according to history and feedback in **C++**.
- Built a decision tree and a recurrent neural network (LSTM) in Keras (on **TensorFlow**) to predict driver's next intent based on driving history, achieving **30 percent** accuracy improvement compared with the state-of-art methods. The main tool used is Python Data Science Stack (**numpy, scipy, pandas and scikit-learn**).

Software

C++ Library for Data Structures and Algorithms

- Implemented most common data structures (Linked List, Stack, Queue, AVL, etc) and algorithms (Binary Search, Sorting, etc) in computer science in **C++**. The techniques used include **object-oriented programming** and **template**. **GitHub:** `https://github.com/xinzhige`

Social Blogging Website

- Built a social blogging website from scratch and deployed it on Heroku. The techniques used include **back-end—Python, Flask, SQLAlchemy, RESTful API and front-end—HTML, CSS, Bootstrap**.

Teaching

Database Systems, Computer Science Dept., UC Davis 1/2016 - 3/2016

- Demonstrated basic database knowledge and related programming techniques in discussion sections.
- Held office hours to explain challenging database system questions and coding problems to 150 students.
- Evaluated homework, programming assignments using gradescope.com.

Data Structures and Programming, Computer Science Dept., UC Davis 1/2015 - 3/2015

- Led all the discussion sections to explain basic and advanced data structures to 100 students.
- Advised students how to design data structures in their programming problems.

Introduction to Computers, Computer Science Dept., UC Davis 1/2012 - 3/2012

- Led lab sessions to teach students Python concepts and coding skills.
- Graded programming assignments, tests and midterms.

Publications

George A. Barnett, Jeanette B. Ruiz, Jesse R. Hammond, Zhige Xin. **An Examination of the Relationship between International Telecommunication Networks, Terrorism and Global News Coverage**, in *Social Networks Analysis and Mining*, 2013.

Zhige Xin, Bingru Yang. **An Independent Homology Analysis Method in Compound Pyramid Model**, in *Proceedings of the 4th IEEE International Conference on Bioinformatics and Biomedical Engineering*, Chengdu, China, 2010.