Cheng Wan *Undergraduate Student in Computer Science*

ACM Class • Zhiyuan College • Shanghai Jiao Tong University

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EDUCATION

- **Shanghai Jiao Tong University** — Shanghai, China
  Bachelor of Engineering in Computer Science — *Sep. 2014 – present*
  - Member of ACM Class, an elite CS program for top 5% talented students
  - Cumulative GPA in Major: 90.1/100

RESEARCH EXPERIENCE

- **Knowledge Computing Group, Microsoft Research Asia** — *Aug. 2017 – present*
  Research Intern
  Adviser: Dr. Chin-Yew Lin
  Target: knowledge mining on LinkedIn using personal information data
  - Decided to construct a life coaching system which assists students with making life plans. It was supposed to demonstrate the lifestyle of typical people who satisfy one of users' potential goals, and give them advice on how to achieve a specific goal according to their personal experience.
  - Extracted primary information including degree, major, college, entering year and graduating year from raw narrative education data. Nearly 90% data was fully analyzed.
  - Proposed and implemented models based on Skip-Gram, autoencoder and RNN for projecting the education experience and each education stage of a person into a vector space. The results were convincing. The model could also predict the position where the person is likely to enter at the next stage.

- **Center for Brain-like Computing and Machine Intelligence, Shanghai Jiao Tong University** — *Jun. 2016 - present*
  Research Assistant
  Adviser: Dr. Liqing Zhang
  Target: apply machine learning methods to visualize features of EEG signals
  - Got familiar with techniques of signal processing, and studied advanced methods including denoising and feature selection for dealing with EEG signals.
  - Applied several feature visualization methods in computer vision field to EEG data and analyzed their bottlenecks.
  - Improved one of the above methods and implemented it using PyTorch. The method derives more diverse and more reasonable results than traditional methods.
  - Leveraged the new method for analyzing the brain evolution of stroke patients during their rehabilitation process.

- **Department of Computer Science, Cornell University** — *Jun. 2017 – Jul. 2017*
  Visiting Student
  Adviser: Dr. Adrian Sampson
  Target: improve DECAF, a type-based approach to controlling quality in approximate programs
  - Got familiar with materials about approximate programming.
  - Proposed a method about parameterized type and provided suggestions concerning how to avoid introducing bugs.
  - Proposed several ways to achieve simplified versions of the parameterized type.

MANUSCRIPT

- **Characterizing EEG Dynamic Features for Motor Imagery Classification**
  - **Cheng Wan** and Liqing Zhang
  - Plan to submit to EMBC 2018

HIGHLIGHTED COURSE PROJECTS

- **SimpleDB** — *May. 2017 – Jun. 2017*
  *A MySQL-like database. Database System, CS392, **98/100**.*
  - Implemented the simulator of buffer pool and heap page in Java.
  - Achieved some basic functions of MySQL.
  - Applied B+ tree to deal with queries efficiently.

- **Item Recommendation** *Apr. 2017 – May. 2017*
  *To predict the rating of a user on an item for personalized recommendation. Machine Learning, CS420, **93/100**.*
  - Designed and implemented a model based on factorization machine using Tensorflow.
  - Achieved 1.343 RMSE error while the strong baseline was 1.356 and the weak one was 1.469.

- **Tone Classifer** *Dec. 2016 – Jan. 2017*
  *A deep learning model for tone classification. Deep Learning, MS318, **93/100**.*
  - Designed denoising methods and feature extraction algorithms, and implemented these methods in Python.
  - Implemented a succinct fully connected neural network with MXNet, and achieved 97% test accuracy while the baseline was 88%.

- **BadKid** *Nov. 2016 – Jan. 2017*
  *A virus which infects ELF files. Operating System, MS110, **98/100**.*
  - Explored the structure of ELF files.
  - Collaborated with two peers, designing the mechanism for attacking ELF files.
  - The virus was simulated successfully on Linux.

- **MIPS CPU** *Sep. 2016*
  *A five-stage pipeline for (almost) all MIPS integer operations. Computer Architecture, MS108, **98/100**.*
  - Implemented pipelined MIPS with forwarding optimization in Verilog HDL.

- **Mugic** *Feb. 2016 – May. 2016*
  *A highly functional compiler of Mugic, a language mixing C and JAVA. Compiler, MS208, **95/100**.*
  - Designed and implemented a parser, an abstract syntax tree and IR language in Java.
  - Designed and implemented a variety of optimizations with regard to register allocation.

- **iGit** *Apr. 2015 – Jun. 2015*
  *A toy version control system like Git. Data Structure, MS105, **99/100**.*
  - Collaboratively designed the framework of iGit, which realizes all basic functions of Git except 'branch' and 'merge', and implemented the project in C++.

Selected Academic Presentations

- A tutorial talk in KC Seminar 2017: **Introduction to Causal Inference** *Nov. 2017*
- Expert student talk on Game Theory Course: **Bimatrix with Fixed Flowing Number** *Apr. 2017*
- A 30-minute presentation in the computer science seminar: **Introduction to Wavelet** *Oct. 2016*

Honors and Awards

- **Honorable Mention** in The Mathematical Contest in Modeling *2017*
- Academic Excellence Scholarship of Shanghai Jiao Tong University (B-level, **top 10%**) *2015, 2017*
- **Gold Medal** in The 2015 ACM-ICPC China Shanghai Metropolitan Programming Contest (**6**/193) *2015*
- **Honorable Mention** in The 2014 ACM-ICPC Asia Bangkok Regional Contest (**7**/102) *2014*
- **First Prize** in The 18th National Olympiad in Informatics in Provinces (**8**/891) *2012*

Teaching Experience

- **Part-time Teacher** at **Shanghai Kongjiang High School** *Fall 2016*
  Design and Analysis of Algorithms
  - Taught algorithms including divide and conquer, graph theory, dynamic programming, and number theory.
  - Introduced practical data structures such as stack, queue, merge-find set, heap, segment tree, hash table and trie.
  - About one-third students in my class won first prize in National Olympiad in Informatics in Provinces 2016.

- **Teaching Assistant** at **Shanghai Jiao Tong University** *Fall 2015*
  CS122: Introduction to Programming
  - Prepared the problems of tests and assignments.
  - Conducted one-on-one meetings to help students with forming good programming style habits.

Skills

- **Programming Languages:** C++, Java, Python, Matlab, MySQL, HTML, Javascript, jQuery, Verilog HDL
- **Tool Kits:** NumPy, PyTorch, Tensorflow, MXNet, OpenCV, ANTLR, BCILab
- **Others:** Git, LaTeX, Markdown, Jupyter Notebook, Robot Operating System (ROS), Socket, Morse Code
- **Relevant Courses:** Introduction to Life Science, Machine Learning, Deep Learning Technology and Its Applications, Natural Language Processing (auditor)