Cheng Wan *Undergraduate Student in Computer Science*

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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: use personal information data from LinkedIn to solve a problem as essential as possible
  - Investigated what is the most important problem related to the LinkedIn data with regard to different groups of people, and decided to build a life coaching system.
  - Designed the function and the framework of the system, which was inspired by the GROW model.
  - Extracted primary information from raw education data which is described in natural language. More than 80% data was fully analyzed.
  - Proposed and implemented a model based on Skip-Gram and autoencoder for projecting every education stage of a person into a vector space. The results were convincing.
- **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 visualizing features of EEG signals (brain waves)
  - Learned techniques of signal processing, and studied advanced methods 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 result than traditional methods.
- **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
  - Learned materials about approximate programming.
  - Raised an idea about parameterized type and suggestions concerning how to avoid introducing bugs.
  - Proposed several ways to realizing simplified versions of the parameterized type.

Manuscript

[1] Wan, C., and Zhang, L. (Under Review). Characterizing EEG Dynamic Features for Motor Imagery Classification.

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.
  - Realized some basic functions of MySQL.
  - Applied B+ tree to deal with queries efficiently.

- **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% validation 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****.*
  - Collaborated with a peer, designing the framework of iGit, which realizes all basic functions of Git except 'branch' and 'merge', and implementing 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

- **External 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 meeting 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)