Cheng Tao

Software Engineer

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Education

University of Wisconsin Madison
MSc in Quantum Computing
Expected: May 2021

Vanderbilt University
B.S. in triple majors
Expected: May 2020

Computer Science	GPA: 3.950
Mathematics	GPA: 3.857
Physics (with Honors)	GPA: 3.833

Skills

Proficient : C, C++, Java, Python
Familiar : SQL, Ruby, Julia, Scheme, Prolog
Quantum : Qiskit, Cirq
Science : Matlab, Mathematica, Madgraph, Madanalysis
WebDev : HTML, CSS, JS, PHP
Design : Adobe Photoshop, Acrobat, Lightroom, Latex
Language : English, Mandarin, Japanese
Other: MS Office, Git, Unix

Extra-Curricular

Judge @ Vandy Debate Team
- organize Parliamentary debate tournament
- evaluate debater performance and give advice

Powerlifting @ Vandy Rec
- I weight 130 lbs and I bench press 150 lbs, squat 210 lbs, deadlift 265 lbs
- coach and give fitness advices for beginner lifter

Work Experience and Internships

Oct'18-Now **Research Assistant for Vanderbilt High-Energy Physics**
Develop a methodology to discover Higgsino via Vector Boson Fusion inside Large Hadron Collider under the supervision from Prof. Alfredo Gurrola. Found a algorithm that use double lepton channel to improve the discover potential of Higgsino by 6 sigma.

Projects

Jan'20 **Vanderbilt Course Scheduler**
Collaborate on a **Python** project that use depth-first search to produce course plan for Vanderbilt students. I use lazy evaluation to speed up the algorithm by ∼50 times faster. Lead group discussion and present weekly in class.

Sept'19 **AI Course project: Pac-Man AI**
Implemented Pac-Man agents in **Python** using reinforcement learning, A* search, alpha-beta minimax, and Q-learning techniques.

Sept'19 **Kaggle Challenge: Higgs Boson Machine Learning**
Classified Higgs Boson from background noise using machine learning, **scikit-learn and Tensorflow**, including random forest, SVM, logistic regression and neural network.

Sept'19 **Programming Language Course Project: Sudoku Solver**
Implemented backtracking sudoku solvers on **C++, Racket and Prolog**. Demenstrated the difference between imperative, functional and logic programming language.

Sept'18 **Software Development Course Project: Expression Tree**
An interactive **C++** project that parses mathematical expression into tree data structure. Used of **design pattern** extensively to implement functionality like syntax checking, customization, variable setting, command roll back.

Electives and MOOCs

Electives Artificial Intelligence, Machine Learning, Numerical Analysis
Operating System, Programming Language, Data Structure
Quantum Computing, Quantum Field Theory, Solid State Physics, Statistical Mechanics

MOOCs **The Complete 2020 Web Development Bootcamp**
HTML, CSS, Bootstrap, Javascript, jQuery, SQL, Node.js, React, MongoDB

Talks

Nov'19 **86th Annual Meeting of the APS Southeastern Section** North Carolina
Search for Higgsino inside Large Hadron Collider via Vector Boson Fusion

Achievements

-Got an A in Graduate Quantum Field Theory in my junior year
-Got an A in Graduate General Relativity in my junior year
-Dean's list all semesters
-Top 25% in Euclid Math Challenge
-First Place, Suzhou High School Math Team Challenge
-Top 10% in Chem 13 News Exam held by University of Waterloo
-Top 5% in UK Senior Math Challenge
-Top 5% in Hypatia Waterloo Math Challenge