Yunzhi Zhang

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EDUCATION

University of California, Berkeley, B.A. Computer Science & Pure Mathematics *Graduation: 2020 (Expected)*

SKILLS

Python, C/C++, Java, UNIX, PyTorch, CVXOPT, Arduino, shell script, Jupyter, git, LaTex, Markdown, HTML

EXPERIENCE

- **Parallel Computing** – RISE Lab, UC Berkeley *06/2018 to Present*
  - Work on Numpywren, a computational framework built on top of AWS Lambda. Designed for remote, parallelized execution of large matrix operation which decouples memory and computation. Mentored by Professor Ben Recht.
  - Implement large scale, communication avoiding linear algebra operations algorithm (Cholesky, QR, Tall Skinny QR /TSQR) and parallel optimization.
    - Python, C++, CMake, OpenMP, LAPACK, BLAS, Futures (python), gdb
- **Natural Language Processing** – Mofrad Lab, UC Berkeley *05/2018 to 08/2018*
  - Preprocess data in pandas, generate coarse labels by keyword extractions, train neural networks for text classification.
    - Pandas, shell scripts, Scikit-learn, fastText, Fast.ai, Word2vec, PyTorch, RNN (LSTM), CNN, SVM
- **Mathematical Modeling** – Department of Mathematics, UC Berkeley *03/2018 to 12/2018*
  - Build model in R for synergy analysis of mixed radiation rays. Mentored by Professor Rainer K. Sachs. Develop data with data from Amy Kronenberg at Lawrence Berkeley National Laboratory.

PROJECTS

- **Cubic Mobile Robotics** – Arduino, 3D Printing *02/2019 to Present*
  - Momentum driven cubic mobile robotics.
- **Prediction of Molecular Docking Affinities** – PyTorch, RDKit, Macromodel, GCN *02/2019 to Present*
  - Use recently-described 3D graph convolutional neural network (GCN) to predict molecular bindings, with an emphasis on exploring spatial structures description.
- **Operating System based on Pintos** – C, UNIX, CMake, HTTP Protocol, gdb, git, *02/2019 to Present*
  - Implement multi-threading, scheduler, user process and file system based on Pintos.
- **JapApp** – AngularJS, HTML 12/2018 to 12/2018
  - Online Japanese Dictionary. Supports searching, sorting and pop-up full definitions.
- **UrVoice** – Swift, IBM Watson API *11/2018 to 11/2018*
  - iOS app for keeping diary. Supports diary creation/archive, user authentication, tone analysis.
- **Star Trekking** – Java 08/2018 to 08/2018
  - Java game where player jumps on balance wood in a moving star field, scoring by catching stars.

PUBLICATION

Huang, E.G., Lin, Y., Ebert, M., Ham, D.W., Zhang, Y.C.*, Sachs, R.K. Radiat Environ Biophys (2019). DOI.

OUTREACH

- **Undergraduate Student Instructor (uGSI)** – UC Berkeley EECS 01/2019 to Present
  - Teach sessions, hold office hour for UC Berkeley CS 70: Discrete Mathematics and Probability Theory.
- **Senior Mentor** – Computer Science Mentor (CSM) 08/2018 to Present
  - Teach weekly session; lead junior mentors.
- **Mentee** – Berkeley AI Research Group (BAIR) 08/2018 to 12/2018
  - Research on optimization theory research, mentored by phD student at Calvin Lab.

COURSEWORK

GPA 3.952/4.000; **Technical GPA** 4.000/4.000

Computer Theory – Algorithm (CS170, A+); Probability (CS70, A+); Data Structure (CS61B, A).

Software/EE – Operating Systems (CS162, ongoing); Devices (EE16B, A+); Programs (CS61A, A+); Machine Structure (CS61C, A).

ML – Machine Learning (CS189, A); Optimization Models (EE127, A); Deep Neural Networks (CS182, ongoing).

Maths – Analysis (Math 104, A+); Analysis (Math 105, ongoing); Abstract Algebra (Math H113, ongoing); Linear Algebra (Math 110, A); Linear Algebra (Math H54, A); Multivariable Calculus (Math 53, A+).

Physics – Quantum Mechanics (Physics 137A, A+); Quantum Mechanics and Thermodynamics (Physics 5C, A).