# CYNTHIA CHANG

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Recent CS graduate of **top-tier university** with strong technical, analytical and interpersonal skills. Experienced and extensively educated in **object-oriented programming**, designing, developing and debugging code. Self-motivated, communicative and proactive with a positive, growth mindset. **Effective time management**, **project management** and multi-tasking capabilities. Looking forward to leveraging my skills in a **collaborative** environment.

## EDUCATION

**UNIVERSITY OF CALIFORNIA, BERKELEY** || *Berkeley CA* **2016-2020**

- Bachelor of Arts in **Computer Science**
- *Relevant Coursework:* Computer Graphics | Artificial Intelligence | Machine Learning | Database Systems | Data Structures | Principles & Techniques of Data Science | Computer Security | Efficient Algorithms & Intractable Problems

## EXPERIENCE

1. Functioned as key member in developing a **compact Minecraft shader program** in OpenGLSL.
   - Implemented the **Blinn-Phong** shading model from sampled environment textures, determined light position over time for specular calculations; produced efficient **real-time renderings** of water reflections.
   - Constructed water waves using a sum of sine functions on vertex data over time.
   - Used: OpenGL Shading Language, Atom, Optifine 1.14, Mojang Minecraft 1.14
2. Developed a **database system** integrated with PostgreSQL in a Docker container.
   - Designed and implemented B+ tree indexing, BNLJ, Grace Hash Join algorithms for efficient data retrieval.
   - Implemented multigranularity locking methods for concurrency control in codebase.
   - Gained knowledge of distributed transactions, ER diagrams, database recovery with write-ahead logging.
   - Used: Java, IntelliJ, SQL, Docker, Maven
3. Implemented a **two-layer Feed-Forward Neural Network** to train and predict on various data sets.
   - Implemented both foward-/backward-propagation methods for ReLU, Softmax, Tanh functions, and cross-entropy and L2 losses. Developed both **fully-connected and Elman** layers.
   - Achieved 96%+ accuracy on Iris dataset and ~73% on Higgs dataset (Kaggle) with fully-connected layers, ~80% accuracy on a sinewave dataset using an Elman layer.
   - Used: Python 3, Sublime Text 3, Kaggle
4. Designed and developed a **local version control** tool based on Git.
   - Implemented efficient file **push, pull, deletion, and merge** features, complete with branching mechanisms such as tracking, switching, merging, and deleting. Utilized the SHA-256 file encryption method.
   - Efficiently stored and retrieved files within a **tree-structured linked list**. Tested code with JUnit tests.
   - Used: Java, IntelliJ IDE, JUnit
5. Utilized Python **scikit-learn (sklearn) libraries** with SQLite to develop prediction model of NYC taxi ride times.
   - Created visualizations of spatial and temporal information with histograms to determine best feature set.
   - Determined final prediction model using values from K-Fold cross-validation accuracies.
   - Used: Python Pandas – scikit-learn, seaborn, matplotlib, SQLite, Jupyter Notebook, Kaggle

**U.C. BERKELEY NEW STUDENT SERVICES** || *Berkeley, CA* **Sept. 2018 – Sept. 2019**

***Student Coordinator***

- Pioneered **automated student grouping** by developing Python executable. Reduced manual work time to seconds.
- Co-lead the recruitment, retention, training, and appreciation of all 500+ student leaders. Created student engagement and advertising methods. **Increased application and retention rates** by over 20% from previous year.
- Served as project lead for organizing 7 off-campus excursions. Designed a cohesive template for 140+ unique itineraries. Person **in charge for all communication** between venues, student leaders, and volunteers during event.

## SKILLS & INTERESTS

**Technical:** Java, Python – Numpy, Pandas, C/C++, OpenGLSL, SQL/PostgreSQL, HTML/CSS, GitHub, PHP
**Environments Used:** Ubuntu 18.04, Jupyter Notebook, PyCharm/CLion/IntelliJ IDEs, Sublime Text, Atom
**Languages:** Mandarin Chinese, French (Elementary)
**Interests:** Bouldering, Bullet Journals, Classical Piano, Horticulture, Jigsaw Puzzles, Urban Dance