# CYNTHIA CHANG

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## SUMMARY

Recent CS graduate experienced with **object-oriented programming**. Strong analytical and interpersonal skills with a positive, growth mindset. Looking forward to leveraging my skills in a **creative**, **collaborative** team.

## 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

## PROJECTS & EXPERIENCE

1. Constructed a **two-layer Feed-Forward Neural Network** to train and predict on various data sets.
   - Implemented both forward-/backward-propagation **machine learning** 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
2. Utilized Python **scikit-learn (sklearn) libraries** with SQLite to develop prediction model of NYC taxi ride times.
   - Justified final **prediction model** using results from **K-Fold cross-validation,** scoring 80%+ test accuracy.
   - Created visualizations of spatial and temporal information with histograms to determine best feature set.
   - Used: Python Pandas – scikit-learn, seaborn, matplotlib, SQLite, Jupyter Notebook, Kaggle
3. 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 IDE, SQL, Docker, Maven
4. Designed and developed a **local version control** tool based on Git.
   - Implemented efficient file manipulation features, complete with branching mechanisms such as tracking, switching, merging, and deleting. Performed intermediary **JUnit tests.**
   - Utilized various **data structures** for efficient storage and retrieval with SHA-1 encryption method.
   - Used: Java, IntelliJ IDE, JUnit, GitHub
5. Functioned as key member in developing a **compact Minecraft shader program** in OpenGLSL.
   - Implemented the **Blinn-Phong** shading model with sampled environment textures, and 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, GitHub

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

***Student Coordinator***

- **Automated student grouping** by developing a Python executable which reduced manual workload by 95%.
- **Increased** student leader **application and retention rates** by over 20% from prior year with new recruit strategies.
- 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:** Linux Ubuntu 18.04, Windows, Jupyter Notebook, PyCharm/CLion/IntelliJ IDEs
**Languages:** Mandarin Chinese, French (Elementary)
**Interests:** Bouldering, Bullet Journals, Classical Piano, Horticulture, Jigsaw Puzzles, Urban Dance