TIANREN CHEN

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EDUCATION

University of California, Davis **June 2025 (Expected)**
B.S. in Computer Science (CS) Davis, CA

RELEVANT COURSEWORK

Courses: Machine Learning, Deep Learning, Web Programming, Algorithm Design and Analysis, Probability & Statistics, Computer Architecture, Software Engineering, Data Structures, Programming Languages, Object-Oriented Programming

RELEVANT SKILLS

Technical Skills:

- **Programming Languages:** C/C++, Java, Python, MA TLAB, Assembly, SQL, JavaScript, HTML/CSS
- **Data Analytics:** Google Data Analytics Certificate
- **Computer Software Development:** GitHub, Docker, VS Code, PyCharm, MySQL, React
- **Language Proficiency:** Chinese (Native), English (Proficient, 4-Year U.S. Undergraduate Study)

Soft Skills: Problem-solving, critical thinking, collaboration, teamwork, project management

PROJECTS & EXPERIENCE

Predicting Movie Ratings Based on Metadata *Davis, CA*

- Developed an end-to-end machine learning pipeline using integrated datasets from IMDb, Kaggle, and GitHub to predict IMDb movie ratings.
- Compared multiple predictive methods including Random Forest, XGBoost, and Artificial Neural Networks (ANN) to identify the best-performing model.
- Optimized hyperparameters and training configurations, employing advanced techniques to minimize loss and enhance model accuracy.

Text Classification and Generation with RNN Models *Davis, CA*

- Designed and implemented RNN-based models for text classification and story generation using two curated datasets.
- Trained RNN models to classify textual content and generate coherent sequences from given prompts.
- Compared the performance of RNN, LSTM, and GRU architectures with various configuration changes.
- Evaluated model accuracy using learning curves and qualitative comparisons with training data.

Image Classification for Object Recognition *Davis, CA*

- Built CNN models to classify hand-written digits, grayscale face images, and colored objects across three datasets.
- Trained and evaluated multiple CNN architectures, generating learning curves and performance reports.
- Experimented with kernel size, stride, padding, pooling, and loss functions to analyze their impact on model accuracy.

Graph Embedding and Node Classification with GNN Models *Davis, CA*

- Developed a Graph Convolutional Network (GCN) for node classification using Cora, Pubmed, and Citeseer datasets.
- Implemented a custom GCN architecture for graph embedding and trained models on citation networks.
- Evaluated performance across datasets by analyzing learning curves and classification accuracy.
- Compared generalization across different graph structures and documented findings in a formal technical report.

Web Application with OAuth and DB Management *Davis, CA*

- Built a full-stack web application using Node.js, Express, SQLite, and Handlebars.
- Integrated Google OAuth 2.0 authentication using the Passport.js library.
- Developed custom APIs and utilized fetch to retrieve emoji data from third-party services.

Digital Design of CPU and Cache Systems *Davis, CA*
- Built CPU and cache architectures using logic gates and digital design principles.
- Optimized memory access paths and validated system design through simulation.

Distributed File System Project *Davis, CA*
- Developed a multi-threaded distributed file system in C++ to manage concurrent file operations.
- Applied mutexes and condition variables to ensure thread-safe concurrency.
- Implemented RESTful APIs supporting GET, PUT, and DELETE operations.
- Used FIFO scheduling and transactional logic to maintain consistency and fault tolerance.

L-Store Database System *Davis, CA*
- Built an in-memory L-Store using base and tail page architecture to optimize data storage.
- Enhanced system durability with disk persistence and transactional operations.
- Supported OLTP and OLAP workloads using a multi-threaded thread pool with synchronization.

Canvas System Optimization *Ohlone, CA*
Collaborated with Prof. Dr. Jim D. Pham
- Rebuilt and optimized part of the Canvas system in C++ with enhanced modularity.
- Developed a rendering engine, input handler, and object manager for system organization.
- Applied pointers and manual memory management to improve performance.
- Implemented double buffering to eliminate flickering in graphics rendering.

COLLEGE ACTIVITIES

DUBIS, Davis, CA
Head of Publicity and Project Management Feb 2024 – Present
- Led a 20-person team to organize 3 large public dubbing performances for 200+ attendees.
- Developed management strategies for team coordination.

MUSICOW, Davis, CA
Music Performer in davis downtown April 2025 – Present
- Participated in dozens of public singing shows (50–100 attendees).

CUSU (Chinese Undergraduate Student Union), Davis, CA
Team Leader of PR (Public Relationship) Sept 2023 – Apr 2024
- Wrote promotional copy, designed posters, and managed PR collaborations.
- Created business proposals and partnered with sponsors for various events.