KEYU LONG

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EDUCATION

University of California, San Diego (UCSD)	**San Diego, CA**	Sep 2019 - Mar 2024

Bachelor of Science in Data Science, GPA: 3.86

Relevant Coursework: *Deep Learning, Recommender System and Web Mining, Probabilistic Modeling and ML, Optimization Methods for Data Science*

University of California, San Diego (UCSD)	**San Diego, CA**	Expected Jun 2026

Master of Science in Computer Science

Relevant Coursework: *Algorithm Design and Analysis, Statistical Natural Language Processing, Operating Systems*

EXPERIENCE

Divisive Normalization: Biological Inspired Neural Network Structure Mar 2023 - Jun 2024

Undergraduate Researcher in Gary Cottrell's 'GURU' lab at UCSD

- Integrated divisive normalization layers inspired by primate vision into PyTorch models, serving as both activation and normalization functions.
- Enhanced data loading efficiency by replacing the CPU data pipeline with NVIDIA Data Loading Library (DALI), resolving CPU bottlenecks and achieving a 2x speedup in training.

PROJECTS

New Initialization Mechanisms for Convolutional Neural Networks Oct 2023 - Mar 2024

- Led a time develop and implement a novel initialization method for CNNs inspired by advanced neural network research, utilizing PyTorch on datasets such as SVHN, CIFAR-10, and Tiny ImageNet.
- Achieved a 2%-6% performance improvement over state-of-the-art Kaiming initialization methods across multiple image classification datasets.

Recommender Systems and Natural Language Processing on Amazon Reviews Jan 2023 - Mar 2023

- Engineered a recommender system using Multi-Layer Perceptrons to predict star ratings, achieving a 64% reduction in mean squared loss compared to similarity model.
- Fine-tuned pre-trained BERT model on NLP classification, achieving a 25% increase in accuracy over Tf-idf model.

Efficient GPU-Based Custom MLP Implementation with CuPy Oct 2022 - Dec 2022

- Implemented custom multi-layer perceptrons (MLPs) using CuPy to enable efficient GPU computation, replacing NumPy operations.
- Developed customized backpropagation algorithms, stochastic gradient descent optimizations, activation functions, and regularization techniques.
- Applied the MLP model from scratch to image classification tasks on CIFAR-10 (achieved 50% accuracy) and MNIST (achieved 97% accuracy) datasets.

SKILLS

Programming	Python, Java, C, JavaScript, SQL, Git, AWS, Docker, Kubernetes
Data Science	NumPy, Pandas, Spark
Machine Learning	Scikit-Learn, XGBoost, Recommender System
Deep Learning	Pytorch, CNN, RNN-LSTM, Transformers, NLP, CV
Language	Mandarin (Native), English (Professional)