

Keer Ni

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EDUCATION

University of California Davis, Davis, CA	September 2023
Bachelor of Science in Computer Science	GPA: 3.96/4.00
Bachelor of Science in Applied Mathematics	Minor in Statistics
Bachelor of Arts in Psychology	

SKILLS

Advanced: C++, C, Java, Python, Linux, HTML, CSS, JavaScript, C#, R, MATLAB, GDB, Unit-testing

Python libraries (for Machine Learning and Deep Learning): Scikit Learn, PyTorch, TensorFlow

Intermediate: Bash scripting, Git, x64, RISC-V, Angular, .NET

Languages: Mandarin Chinese and English (Fluent), Japanese (Intermediate)

LAB AND RESEARCH EXPERIENCE

Undergraduate Research Assistant, UC Davis Dept. of Computer Science Jun. 2022 – Sep. 2023

Analysis of Malaria Variants

- Collaborated with Dr. Edwin Solares to work on Bioinformatics projects to address problems in genetics and genomics, especially the plasmodium vivax genome and malaria.
- Created a data preprocessing pipeline using bash script (indexing reference fasta files, aligning preprocessed sequencing data, postprocessing results based on quality) for genomic data.
- Applied machine learning methods to analyze the processed data (Confusion Matrix, TSNE, PR-Curve, ROC-Curve, SVD, PCA, and DTL) and train classifiers to identify variants of malaria diseases.

Depression Project

- Worked with Dr. Ilias Tagkopoulos and a team of Ph.D. students to study health science projects for addressing questions in evolution, food systems, and synthetic biology.
- Collaborated with the depression project team to analyze psychological datasets and train machine learning models (AdaBoost, Radom Forests, MLP) for predicting teenage depression.
- Built a generalized machine learning pipeline called MSAP in Python for model selection (missing value imputation, features scaling, outlier detection, and classification) and model analysis.

MSAP GPU Optimization

- Extended the Model Selection and Analysis Pipeline (MSAP) for machine learning to an individual research project under the supervision of Dr. Ilias Tagkopoulos and the Ph.D. students.
- Integrated GPU functions to optimize MSAP using CUDA, cuML, LightGBM, cuDF, and cuPy to reduce data preprocessing and model selection runtime, then generate documented reports.
- Attended weekly lab meetings to discuss academic papers, got familiar with and understand progress on other projects, and presented results from GPU incorporation.

Undergraduate Research Assistant, UC Davis Dept. of Psychology Jun. 2022 – Sep. 2023

- Worked with Dr. Erie Boorman and Postdoctoral Researcher Lindsay Rondot to work on behavioral and decision-making projects to address questions in Psychology and Neuroscience.
- Designed the experiment using model-based and model-free principles, coordinated participants, organized behavioral tests, and MRI scanning sessions, then analyzed collected brain activity data.
- Preprocessed brain scanning and behavioral data, applied time series analysis, and trained SVM classification machine learning model to predict human decision-making progresses, skills, and results.

Undergraduate Research Assistant, UC Davis Dept. of Mathematics

Jun. 2022 – Jun. 2023

- Worked with Dr. Alex Chandler and a group of 3 undergraduates to apply Learning Algorithms (Linear Regression, Polynomial Regression, Neural Net) to study relationships in Knots Theory.
- Generated datasets using khovanov homology of braids in SageMath to extract numbers and locations of Free Groups and Torsion Groups from links and knots.
- Constructed academic reports to explain the Learning Algorithms being used and how the results represent concepts in Knots Theory, by using GitHub for organizing the information.

PROJECTS

Group Projects:

SchedGo Course Selection Calendar

June 2020 – March 2021

- Performed web development using C#, HTML, CSS, Angular, and .NET.
- Converted universities' course lists to searchable objects in MongoDB.
- Facilitated teamwork and weekly meetings for team of 16 to form design plans.

Fitness Tracker

May 2021

- Managed browser-server communication as HTTP requests and responses.
- Imported D3 library to construct bar charts for exhibiting user daily data.
- Converted and stored individual exercise data in Sqlite3 database.

Smart Fridge

December 2020

- Analyzed the current market and future applications with insurance system.
- Implemented concepts of multiple and virtual inheritance using classes and C.
- Applied mock data for information communication between devices.

Individual Projects:

Hash Table with Priority Queue

March 2022

- Designed a hash table class using smart pointers and operator overloading.
- Wrote increase-decrease key methods for priority queues with hash table.

Network Flow and Teaching Assignment

March 2022

- Implemented functions to solve network flow and return the max flow.
- Extended the flow models to provide teaching assignments in universities.

Public Post Search

December 2020

- Facilitated client and server communication by using JSON objects.
- Created a C++ post object from JSON and merge to the original post.

LEADERSHIP

Chinese Undergraduate Student Union

Davis, CA

Public Relation Department Director

September 2019 – June 2022

- Collaborated with 10 school officials, 20 clubs, 4 colleges, and 30 external student unions.
- Responded to annual campus events efficiently to promote belonging and safety for Chinese students.
- Created public posts on social media (Instagram, Facebook, Twitter, LinkedIn, YouTube).
- Planned, organized, and held events for celebrating traditional Chinese Holidays with up to 1,000 attendees.

AWARDS

University of California Davis Dept. of Mathematics, Citation for Outstanding Performance

Recognition of Outstanding Undergraduate Accomplishment in Mathematics 2023, awarded to top 19 graduated students

University of California Davis, College of Letters and Science, Dean's Honors List

Fall Quarter 2019, Winter-Spring-Fall Quarter 2020, Spring Quarter 2021, Spring Quarter 2022