Bryan (Yu) Zhou

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Education

University of California, Los Angeles (UCLA) Aug 2019 - Present
B.S. Mathematics of Computation, Class of 2023

- **Major GPA: 3.965/4.0**
- Overall GPA: 3.951/4.0
- Dean's Honors List

No.1 Middle School Affiliated to Central China Normal University Sep 2016 – Jun 2019
Secondary School Diploma, Class of 2019

- **GPA: 96.86/100**
- GRE: 330/340

Research Experience

Structures-Computer Interaction Laboratory at UCLA Samueli School of Engineering Aug 2020 - Feb 2021
Undergraduate Researcher with focus on:

- Implementing a SLAM(simultaneous localization and mapping) algorithm for robots in complex environments. Perform odometry with an EKF(Extended Kalman Filter) to fuse data from IMU, Robot-Wheel-Encoder, Lidar and Monocular Camera.
- Building and configuring a simulated operable robot model on RViz and Gazebo to generate training data for the SLAM algorithm. The model also receives and displays output odometry results from the EKF.

Knowledge Engineering Group (KEG) at Tsinghua University Dept. of Computer Science Jun 2021 - Present
Undergraduate Researcher with focus on:

- Natural Language Processing with BERT(Chinese) in Pytorch
- Chinese Language News Data Processing

Skills

Languages:

- Python - Advanced
- JavaScript - Intermediate
- Bash/Shell Script - Intermediate
- C/C++ - Advanced
- R - Intermediate
- Lisp - Beginner

Machine Learning:

- Python: Pytorch, Scikit-learn, Numpy, Pandas, Matplotlib, TensorFlow (beginner)
- R: dplyr, ggplot2, tidyr, etc.

Web Development:

- Backend: Node.js, MongoDB, Mongoose, Express.js, JWT
- Frontend: React.js, HTML & CSS (beginner)

Tools:

- Coding: XCode, VScode, PyCharm, Spyder, RStudio, Google Collab, Python Idle, Jupyter, Atom
- Text Editors: Vim, Emacs, Sublime
- Other tech: Linux Ubuntu, Unix Systems, Git/Github

Relevant Coursework

- STATS 10: Statistical Programming with R I
- STATS 20: Statistical Programming with R II
- PIC 16A: Python with Applications
- CS 30: Principles and Practices of Computing
- CS 31: C++: Object Oriented Programming
- CS 32: C++: Data Structures and Algorithms
- CS 33: Intro to Computer Organization
- CS 35L: Software Construction Laboratory
- CS 146: Machine Learning with Applications
- CS 180: Algorithms and Complexity
- MATH 31A: Differential and Integral Calculus
- MATH 31B: Integration and Infinite Series
- MATH 32A: Calculus of Several Variables I
- MATH 32B: Calculus of Several Variables II
- MATH 33A: Linear Algebra and Applications
- MATH 33B: Differential Equations
- MATH 61: Discrete Mathematics
- MATH 115A: Linear Algebra
- MATH 170E: Probability and Statistics
- MATH 131A: Real Analysis
- MATH 132: Complex Analysis

Projects

***Goal-Bruins*:** A full stack web application: An interactive goal planner that allows users to create, follow, and archive their personal goals. Users can socialize with each other using follow/like/comment features. Frontend uses React.js with HTML and CSS. Backend uses Node.js, Express API and MongoDB Database. Uses JWT for user authentication.

***Character-Recognizer*:** A two layered (784-400-26) Neural Network implemented using PyTorch that can recognize alphabetical characters with 0.9733(SGD optimizer)/ 0.9987(Adam optimizer) accuracy when running on randomized test data. Uses cross-entropy-loss as optimization criterion and sigmoid as activation function.

***Facial-Recognizer*:** Two clustering algorithms using Kmeans and Kmedoids to match photos of the same celebrity taken at different occasions. The photos are processed with PCA to extract eigenfaces and reduce complexity. Then use Kmeans or Kmedoids to cluster photos based on similarity.

***Mini-Rogue*:** A C++ game project that utilizes multi-level inherited classes interacting with one another. Uses recursive style maze traversing algorithms to optimize non-player-character movements. Operates on STL containers (Vectors/Lists) to store and modify game NPC characteristics.

Extracurriculars

Affiliations: UCLA Badminton Club, CSSA-UCLA
Interests: Badminton, Travelling/Photography, Piano, Cooking