Yichen Wang

Email: kevinwangyichen@g.ucla.com
Linkedin: https://www.linkedin.com/in/yichen-wang-4750461bb/
Mobile: +1-424-440-0022
Github: github.com/yuesha-yc

Education

University of California, Los Angeles — Los Angeles, United States
Bachelor of Science - Mathematics of Computation; GPA: 3.95 (Major: 4.00) — *Sep 2021 - June 2025 Expected*
Scholarships: Dean's Honors List, 2021-2022

Beijing National Day School — Beijing, China
Advanced Placement Diploma; GPA: 4.13/4.00; Rank: 15/150 — *Sep 2018 - Jul 2021*
Scholarships: Presidential Scholarship, Distinguished Student of the Year Recipient

Experience and Positions

AI Division Officer — Los Angeles, United States
Association of Computing Machinery, UCLA — *May 2022 - Present*

Undergraduate Student Researcher — Los Angeles, United States
Arisaka Lab, Department of Physics and Astronomy, UCLA — *Mar 2022 - Present*

Project Lead — Los Angeles, United States
CruX Neurotechnology, UCLA — *Oct 2021 - Present*

Member — Los Angeles, United States
Nu Rho Psi Neuroscience Honors Society, UCLA — *Oct 2021 - Present*

Projects and Research

EEG Alpha Wave Analysis on Eccentric Visual Stimuli — Department of Physics and Astronomy, UCLA
Undergraduate Student Researcher — *Mar 2022 - Present*

- Project Title: *Correlation Between Alpha Wave Frequency and Eccentricity Dependent Reaction Time*
- Conducted EEG data taking and analysis advised by *Prof. Katsushi Arisaka*
- Studied correlation between EEG alpha wave band frequency and reaction time - visual stimulus eccentricity slope
- Presented poster at UCLA 2022 Undergraduate Research Week

Humpback Whales Identification — Association of Computing Machinery, UCLA
Project Lead — *Mar 2022 - Present*

- Project Title: *Humpback Whale Identification with Residual Neural Network*
- Pre-processed 25000+ image dataset for training the model
- Reproduced and adapted ResNet-18 with PyTorch to build the model
- Tuning the hyperparameters to improve model performance
- Achieved 70% accuracy at identifying 5005 unique whales (still improving)

Machine Learning Epileptic Seizure Detection from EEG Recordings — CruX Neurotechnology, UCLA
Project Lead — *Jan 2022 - Present*

- Project Title: *Machine Learning Epileptic Seizure Detection From Electroencephalography (EEG) Recordings*
- Pre-processed Brown University Elipesy Dataset from 400 labeled patient recordings
- Constructed Recurrent Neural Network with TensorFlow, consisting linear, LSTM, dropout, dense layers and sigmoid activation
- Generated individualized EEG streaming chart and real-time diagnosis report including our treatment suggestions
- Awarded winner at LA Hacks 2022
- Link to code repository and Devpost

Multi-Input Game Control With Electromyography Complex — University of California, Berkeley
Project Lead — *Mar 2021*

- Project Title: *Multi-Input Game Control With Electromyography (EMG) Complex*
- Devised a sensor complex with electromyography (EMG) sensors to collect and pre-process upper limb muscle voltage information with C

- Mapped three muscle groups' voltage excitement to three respective in-game actions when reaching thresholds
- Used Arduino UNO with MPU6050 to sense the rotation of the helmet and send yaw, pitch, and roll data to the PC, enabling in-game first-person view
- Utilized matplotlib, serial, and win32api Python packages to process simultaneous data
- Awarded frist prize "Hack To The Moon" in 2021 Cal Hacks hosted by University of California, Berkeley
- Link to code repository and Devpost

Kozai-Lidov Mechanism in Hierarchical Three Body Systems Brown University

High School Student Researcher *Mar 2020 - Jun 2020*

- Paper Title: *Kozai-Lidov Mechanism in Hierarchical Three Body Systems advised by Prof. Gregory Tucker*
- Constructed a Python algorithm to simulate one single and two arbitrary hierarchical three-body systems
- Predicted orbital inclinations, eccentricities, and periodic change of K-L constant of six three-body systems
- Performed analytical Hamiltonian analysis of six modeled systems to validate application of Kozai-Lidov Mechanism
- Published research paper in *International Core Journal of Engineering (ISSN: 2414-1895)*

International Space Settlement Design Competition Beijing National Day School

President *Oct 2018 - Jun 2021*

- Led a team of 45 to draft an 50-page engineering, construction, and development proposal for an ice excavation base on moon
- Designed and developed a 3D model of space stations and scientific bases using Fusion 360
- Coached 100+ students on concepts in physics of space engineering and methods of building 3D models
- Awarded first place in Global Future Space Scholars Meet Competition in 2019

Smart Campus Lost And Found System Beijing National Day School

Project Lead *Nov 2018 - Jun 2020*

- Designed an internet-based smart lost found system, consisting of chips, scanners, and 5 stations on campus
- Constructed a radio-frequency identification system for chips and programmed scanner software using Java
- Built backend data storage and online query system with MySQL and Tencent Cloud
- Distributed 500+ chips to 300+ people and covered over three buildings on high school campus

Skills Summary

Computational Skills

- **Languages**: C, C^{++}, *Python*, MATLAB, *JAVA*, *JavaScript*, LaTeX, *Bash*
- **Frameworks**: PyTorch, TensorFlow, Keras, PsychoPy, NumPy, MatPlotLib, Scikit, Pandas, TQDM, Flask, React
- **Tools**: OpenBCI, GIT, Gradle, Maven, CMake, Fusion 360 (Computer-aided Design)
- **Platforms**: Unix, Arduino, Google Colab, Kaggle

Language Skills

- Chinese: Native; English: Fluent; Spanish: Intermediate
- SAT: 1540; TOEFL: 112

Experiment Skills

- Performing behavioral experiment protocols and recording EEG data with PsycoPy and OpenBCI on human subjects
- Applying electric conducting gel on EEG electrodes for data recording
- Writing MATLAB and Python protocol and data analysis codes
- Performing basic chemistry experiments

Coursework

Computer Science: C++ Programming; Data Structures and Algorithms; Computer Organization

Mathematics: Calculus and Infinite Series; Multivariable Calculus; Linear Algebra; Differential Equations; Discrete Structures

Physics: Mechanics; Waves and Electricity; Magnetism and Electrodynamics; Optics; Special Relativity; Physics Laboratory with Arduino

Neuroscience and Biology: Computational Neuroscience(UW); Intro to Anatomical, Developmental and Physiological Neuroscience and Research Methods(NEUROSC20); Cell, Genetics, and Molecular Biology; University Level Chemistry

Publications

1. Y Wang *, Q Gao, W Zhang, Y Sun, Z Guo, Kozai-Lidov Mechanism in the Simulations of Hierarchical Three-Body Systems, *International Core Journal of Engineering 7 (2), 440-453*

Honors and Awards

- Winner, LA Hacks Hackathon, University of California, Los Angeles - Apr, 2022
- Winner, Cal Hacks Hackathon, University of California, Berkeley - Mar, 2021
- Gold Medal (Global), Future Space Scholars Meet (FSSM) - Oct, 2020
- Gold Medal (Global), British Physics Olympiad (BPhO) Senior Physics Challenge - May, 2020
- Silver Medal (Global), British Physics Olympiad (BPhO) - Dec, 2019
- Gold Medal (Regional), FIRST Global China (FGC) - May, 2019
- Silver Medal (Regional), FIRST Robotics Competition (FRC) - Mar, 2019
- Best Display, China College "Internet Plus" Innovation and Entrepreneurship Competition - Mar, 2019

Volunteer Experience

Club President at Renai Charity Foundation Beijing, China

Organized food donation program impacting over 300 local elderly residents. *Jan 2018 - Jun 2021*