Brian Ou

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EDUCATION

University of California, Berkeley | B.A. Applied Mathematics & Music

- **GPA**: 3.61
- **Relevant Coursework:** Computational Structures in Data Science, Concepts of Probability, Discrete Mathematics, Linear Algebra & Differential Equations, Multivariable Calculus

PROJECTS

Sylly (AI-Powered Academic Planning App) | GitHub **2026**

- Building a web app that parses uploaded course syllabi and auto-populates a user's Google Calendar with exam dates, assignment deadlines, lecture times, and office hours
- Integrated Google OAuth and the Google Calendar API to sync extracted academic events directly to users' accounts
- Designed an AI study assistant that counters the false confidence of passive AI tutoring by enforcing active-recall practice, tracking mastery per topic, and pacing review against upcoming assessment dates

Poker Decision Recommender | GitHub **2025**

- Built a Python decision engine that recommends poker actions (raise/call/fold) using hand evaluation and probabilistic win estimation
- Implemented hand-ranking logic and Monte Carlo simulations to estimate win probabilities against opponent ranges
- Validated recommendations against standard odds tables using randomized simulations

WORK & RESEARCH EXPERIENCE

Member | Neurotech at Berkeley **2025–Present**

- Developing software components for brain-computer interface research using Python-based signal processing pipelines
- Working with EEG data to implement preprocessing, feature extraction, and analysis workflows
- Collaborating in a team-based engineering environment to design and test computational models

Undergraduate Research Assistant | Stony Brook University **2023–2025**

- Conducted quantitative research on pharmaceutical pollution and antibiotic resistance under Bruce Demple, Ph.D
- Built statistical models to evaluate resistance pathways from pharmaceutical pollutants; synthesized data and literature to support ongoing lab publications
- Prepared findings for academic review, strengthening skills in quantitative research and data interpretation

Single-Cell Transcriptomics of Metastatic Neuroblastoma | UC Berkeley **Jan 2026–Present**

- Performed single-cell RNA-seq analysis (Seurat) on paired primary tumor and bone marrow metastasis samples to characterize how neuroblastoma remodels the immune microenvironment
- Clustered and annotated tumor, T/B cell, CAF, and myeloid populations, identifying a shift toward a myeloid-dominant, immunosuppressive metastatic niche
- Applied CellChat ligand–receptor analysis to map CXCL12–CXCR4 and CCL–CCR chemokine signaling driving tumor-associated macrophage recruitment and polarization

LEADERSHIP EXPERIENCE

Co-Founder & Vice President | Alliance Youth Leaders of the U.S., Dix Hills Branch **2022–2024**

- Co-founded branch of national nonprofit; recruited 40+ members and mobilized 100+ volunteers
- Coordinated with regional leadership to design community initiatives

Build Team Leader | FRC Robotics Team **2022–2024**

- Led 12-member robotics team; coordinated mechanical design, prototyping, and system reliability
- Streamlined prototyping process, reducing design cycle by 30% and increasing robot reliability in competition
- Managed budget allocations for materials and trained new members in CAD and mechanical systems

ADDITIONAL SKILLS & INTERESTS

Languages: Fluent in English; Conversational Proficiency in Cantonese and Mandarin
Technical Skills: Python, Git/GitHub, NumPy, Simulation & Data Analysis, R, Seurat, single-cell RNA-seq / bioinformatics

Interests: Financial Markets, Artificial Intelligence (AI), Data-Driven Decision Systems, Classical Music