Brandon Ho

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Education

- **University of California San Diego** — La Jolla, CA
  Bachelor of Science in Computer Engineering, Regents Scholar — *Aug. 2020 – July 2024*
- **Westview High School** — San Diego, CA
  High School Diploma — *Aug. 2016 – June. 2020*
  - Cumulative GPA: 4.49/4.0 — SAT: 1550/1600 — PSAT: 1490/1520
  - Honors: National Merit Corporate Scholarship Recipient, National AP Scholar, National Honor Society
- **Coursework**
  - **CS50AI**: CS50's Introduction to Artificial Intelligence with Python — **Issued**: HarvardX, July 2020
  - **PH526x**: Using Python for Research — **Issued**: HarvardX, June 2020

Experience

- **UCSD Department of Nanoengineering** — Bae Research Group
  Research Assistant — *Aug 2020 - Present*
  - **Role**: Researching Hydrogel Bioelectrics, specifically providing further insight to methods and properties of programmable hydrogels for real world applications (neurotechnology, soft robotics, etc.).
  - **Literature exploration and analysis**: Searched through scientific journals for lab studies and personal project. Self-learned emerging field of hydrogel mechanics.
  - **Lab Communication**: Attended and contributed to weekly lab meetings. Communicated with graduate students to understand field of research (Hydrogel Bioelectrics).
- **FIRST Robotics Team (FTC #8742)** — San Diego, CA
  President, Hardware Executive — *Aug 2016 - Aug 2020*
  - **Role**: Led team to compete in the FIRST Tech Challenge Robotics Competition, building and programming a robot to reliably complete a set of tasks. Oversaw software system integration with hardware (sensors).
  - **3D Modeling**: Used 3D modeling environment, AutoDesk Inventor, to design numerous chassis and functional attachments. Primary 3D designer on the team.
  - **OpenCV**: Utilized OpenCV library for on-bot image recognition for autonomous robot functionality.
  - **PID Control**: Proportional–integral–derivative controller, a feedback control loop mechanism used to more accurately control robot maneuvers. Developed PID control for robot with sensor data (encoder counts, gyro).

Projects

- **PersonAI** — SPIS Program
  AI Chatbot with Customizable Personas (backend for chat site, ProfessorUWU). — *Aug 2020*
  - **TensorFlow/OpenAI GPT**: Implemented TensorFlow with OpenAI GPT's Transformer-based language model on custom dialogue datasets to create custom personas for users to chat with.
  - **Emotion Classification**: Created phrase emotion classifier by implementing an sklearn pipeline on a labeled Twitter dataset. Used model to give the chatbot broader emotional qualities (empathy).
- **Doodle** — Personal Project
  Multi user drawing-charades environment with an emphasis on server-client communication. — *June 2019*
  - **Server/Client Communication**: Built a server-client class to manage multiplayer functionality with customized send and receive functions. Used net package from Java (ServerSocket and Socket).
  - **Data Encryption/Decryption**: Implemented text encryption/decryption architecture to easily send game states and images between server and clients.
- **Overcooked** — Personal Project
  Cooking virtual experience with an emphasis in smooth animation and object collision. — *March 2019*
  - **GUI Development**: Utilized Swing package from Java to create interactive GUI (JPanel, JFrame, JLabel, etc).
  - **Object Oriented Programming**: Built many custom game objects to keep track of and change object states and properties in clean and concise code.

Skills

- **Programming Languages**: Python, Java, HTML, C++ — **Technologies**: Adobe, AutoDesk, AWS