

ANTHONY KANG

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EDUCATION

Harvey Mudd College (HMC)

Bachelor of Science, Engineering

Expected May 2024

Relevant Coursework: Microprocessors, Radio Frequency Circuits, State Estimation, Computer Architecture and Digital Design, Advanced Eng. Systems, Data Structures, Introduction to Machine Learning, Mechanical Design

SKILLS

Languages: C++, Python, SystemVerilog, MATLAB, Java, Fluent in Korean

Software and Systems: Vector CANalyzer, Git, SPI, USART, Spectrum Analyzer, Oscilloscopes, Multimeters, SolidWorks

WORK EXPERIENCE

HMC Clinic with Kaiser Aluminum – Team Lead, Claremont, CA

Sep. 2023 – Present

- Developed an indoor location tracking system for Kaiser Aluminum's 65 acre factory in Spokane, WA
- On a network of Raspberry Pis, wrote Python scripts to convert RSSI into distance and upload location data into a SQL database hosted on Google Cloud

Doosan Bobcat - R&D Intern, Bismarck, ND

May 2023 – Aug. 2023

- Built the foundation to support autonomous features on a construction vehicle (CV) by installing and programming microcontrollers in C++ and used Vector CANalyzer to debug development
- Enabled the remote-control operation of the CV by converting commands into vehicle outputs, implementing PID control for those outputs, and rate limiting the commands for safety and health of the machine
- Researched and selected wheel velocity sensors; implemented communication with the sensors through CANOpen; configured sensors by sending messages through Vector CANalyzer

HMC Clinic with Doosan Bobcat - Python Developer, Claremont, CA

Jan. 2023 – May 2023

- Collaborated with a team of five to create a path planner for an autonomous lawn-mower through Boustrophedon Cellular Decomposition and an Extended Kalman Filter in Python
- Developed a Python script to safely startup and shutdown a lawnmower through CAN communication

Harvey Mudd College Engineering Department - Engineering Lab Proctor, Claremont, CA

Sept. 2022 – Dec. 2023

- Assist 50-60 students in creating an autonomous underwater robot that collects data from the ocean
- Advise students on unfamiliar components such as op-amps, oscilloscopes, thermocouples, and teach skills like soldering, debugging code, and closed-loop control

PROJECTS

Radio Receiver Architecture - Claremont, CA

December 2023

- Designed and built a superheterodyne receiver to decode a secret message transmitted at ~2.3 GHz
- Created a link budget to calculate the noise temperature of the system and select a suitable amplifier from path loss

A Helping Hand (<https://sites.google.com/g.hmc.edu/a-helping-hand/a-helping-hand>) – Claremont, CA

March – May 2023

- Built a hand exoskeleton capable of lifting over 5 lbs, opening doors, and holding common objects
- Researched and selected suitable motors and microcontroller within a \$50 budget
- Soldered all components together, programmed and tested response to a button input in Arduino

Roll Correcting Robot Cat ([gabrielks.github.io/microps-cat-portfolio](https://github.com/gabrielks/microps-cat-portfolio)) - Claremont, CA

Oct. 2022 – Dec. 2022

- Built, with a partner, a 3-D printed robot that can correct its angular displacement (up to 180 degrees) by introducing angular momentum through a motor and machined flywheel
- Programmed an STM32L432KC microcontroller in C++ to read angle measurements from an IMU through USART and send the data to an iCE40 UltraPlus FPGA through SPI
- Programmed PID control in SystemVerilog (FPGA) for a target number of wheel turns and implemented a module to read quadrature signals from a position encoder to provide closed-loop feedback

Configuring Timer Registers on Microcontroller – Claremont, CA

Oct. 2022

- Programmed an STM32L432KC microcontroller in C++ to play songs such as Für Elise and Darude Sandstorm
- Configured timers on the register level to send PWM signals to a speaker and time durations of notes

Autonomous Underwater Vehicle (AUV) – Claremont, CA

March 2022 – May 2022

- Worked with a four-person team to develop an AUV that collected temperature, turbidity, and GPS data in the ocean to examine the relationship between pollution and overheating of the water
- Designed circuits with operational amplifiers to read data from a thermistor and turbidity sensor within a 0 to 3.3V range for an Arduino Teensy