Hae Chan Park

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EDUCATION

University of California, Santa Barbara **June 2025**

B.S. Electrical Engineering, Minor in English

Relevant Coursework: Analog & Digital Circuits & Systems, Logic Design, Signal Analysis, Electronic Devices, Advanced Digital Design Principles, Computer Architecture, Hardware/Software Interface, Sensor/Peripheral Interface, Circuits and Electronics

EXPERIENCE

AutoTenth Autonomous Racecar **Goleta, CA | September 2024 – June 2025**

Capstone Engineer

- Built a fully autonomous 1/10-scale racecar using the Hokuyo UST-10LX LiDAR, Nvidia Jetson Orin Nano, and VESC 6
- Developed software stack in ROS2 for real-time LiDAR data processing, enabling Simultaneous Localization and Mapping (SLAM)
- Conducted testing and evaluation in simulation (Gazebo) and on physical tracks to validate SLAM accuracy and control algorithms

Kim Circuit Group @ UCSB **Goleta, CA | June 2023 - August 2023**

Undergraduate Assistant Researcher

- Assisted graduate researchers and the principle investigator in developing chips that primarily focused on hardware acceleration
- Worked with the Artix-7 100T FPGA development board to test Inputs/Outputs of prospective specially designed chips
- Utilized Verilog in Vivado Design Suite to design these robust tests for group developed chips as well to realize anticipated results

Star Kids Bay Area **Fremont, CA | September 2017 – July 2022**

Lead Hardware/Software Instructor

- Taught courses on robotics using the Microsoft Micro:bot microprocessor board kit and HTML+CSS in various cities in the Bay Area
- Designed educational engineering courses in both software and hardware for underrepresented youth with classes of up to 30 students
- Coordinated the organization of free in-person and online courses alongside senior engineers

PROJECTS

Automated Garage Door System **Goleta, CA | May 2025 - June 2025**

Student Engineer

- Designed a rudimentary garage door system utilizing the STM32L4 microcontroller controlled by sensor and peripheral input using C
- Created a non-blocking UART interface via DMA to transmit system state and sensor feedback while handling asynchronous input
- Integrated I2C and SPI protocols through temperature and accelerometer sensors into the main loop to drive garage door

Class-D Audio Power Amplifier **Goleta, CA | April 2025 - June 2025**

Student Engineer

- Designed and built a Class-D Audio Power Amplifier using pulse-width modulation and MOSFET switching techniques
- Implemented and tuned an LC low-pass filter and negative feedback compensation networks for stable high-fidelity output into the load
- Validated performance through MATLAB simulations and lab measurements, utilizing equipment such as oscilloscopes and DMMs

Simple CPM **Goleta, CA | May 2025 - June 2025**

Student Engineer

- Built and tested with TCL a simple Command Processor Module (CPM) utilizing the Nexys A7-100T FPGA in Vivado Design Suite
- Designed a finite state machine (FSM) to process commands received via JTAG AXI interface, executing operations using BRAM
- Implemented the entire system in Verilog HDL and analyzed performance through RTL schematics and static timing reports

"IIC-1" Breadboard Processor **Goleta, CA | February 2023 - April 2023**

Main Engineer

- By hand, designed, built, and tested a 4-bit programmable processor on breadboards using 7400 series Low-power Schottky TTL chips
- Utilized over 25 individual TTL chips and two EEPROMs for reprogrammable control logic to allow further expansion of instructions
- Designed to host 16 programmable memory addresses, a 100 Hz ±30 (variable) clockspeed, and a 4-bit data bus that can be expanded

SKILLS & INTERESTS

- Software: **Python, C/C++, Verilog, MATLAB, Multisim, LTSpice, KiCad, Logisim, Modelsim, Xilinx/Vivado, Labview, TCL, Keil uVision5**
- Skills: soldering iron, waveform generators, oscilloscopes, power supplies, multimeters, PCB design
- Areas of Interest: Computer architecture, FPGAs, Embedded Hardware/Software, Robotics