Sihoon Kim

CONTACT

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EDUCATION

New York University, Tandon School of Engineering | New York, NY
Bachelor of Science in Electrical Engineering | Expected May 2028

- GPA: 3.633/4.0

SKILLS

- Microcontrollers: STM32(ARM-Cortex M4), Arduino (Atmega32), Raspberry Pi 5(Arm Cortex A76)
- Languages: C, C++, Assembly, Verilog, Python, Java
- IDE: STM32CubeIDE, VScode, Arduino, Vivado
- Tools & Technologies: GDB/ST-Link debugging, Git, Docker (dev/test environments)

PROJECTS

Phantom Autopilot – STM32 Flight Control System (In Progress)

- Developed embedded flight control logic on STM32 Nucleo F411RE, chosen for reliability and real-time performance.
- Interfaces with FlightGear for gyro, accelerometer, and timing data; outputs control signals to elevator and aileron actuators.
- Implements Extended Kalman Filter (EKF) and quaternion-based orientation for precise orientation tracking.
- Debugging and verification performed using GDB/ST-Link.

Solix-16 Custom CPU Architecture

- Designed 16-bit Harvard CPU with separate ROM (4K×16-bit) and SRAM, inspired by RISC principles.
- Developed custom ISA with 4-bit opcodes for R-Type, I-Type, and J-Type instructions.
- Implemented ALU supporting arithmetic, logic, and shift operations with Zero, Negative, Carry, Overflow flags.
- Verified single-cycle execution datapath, branching logic, and register file (11 registers) via simulation.
- Designed a program that compiles assembly into machine code using C++.

MyOS - Bare Bones Operating System

- Built minimal x86 OS with custom bootloader loading kernel via GRUB2.
- Displayed “Hello World” on VGA (16-color palette) demonstrating low-level video memory access.
- Focused on debugging boot process, kernel load, and hardware initialization routines.

Lightweight Rechargeable Mouse (Logitech G305 Mod)

- Designed and integrated rechargeable system (3.7V LiPo, TP4057 charger, LM2596 buck converter) with ultralight 3D-printed chassis.
- Developed single-board SMD PCB schematic (MP2617, MP2155) to miniaturize final design.

EXPERIENCES

NYU RoboMasters VIP Team | Incoming Electrical Member

- Selected for the university’s premier competitive robotics team to design power distribution systems for autonomous combat robots (Spring 2025).
- Preparing to design custom PCBs and implement STM32 embedded firmware for the Power Management Module (PMU)