

Yunzhe Deng

Irvine, CA | yunzhedengwork@gmail.com | 714-930-6600 | www.linkedin.com/in/yunzhedeng

EDUCATION

University of Pennsylvania

Master of Science in Electrical Engineering

Philadelphia, Pennsylvania

August 2025 - December 2026

University of California, Irvine

Bachelor of Science in Computer Engineering

Irvine, CA

September 2021 - March 2025

SKILLS

Embedded Firmware: C/C++, Bare-Metal C, SiWG917 Cortex-M4F, ATmega328PB, STM32, FreeRTOS/CMSIS-RTOS2, RTOS Tasks, Mutexes, Device Drivers, Interrupts

Interfaces / Connectivity: ADC, GPIO, PWM, Timers, SPI, I2C, UART, MQTT/Wi-Fi, Sensor/Display Integration

PCB / Hardware: Altium Designer, PCB Design, Board Bring-Up, Schematic Capture, PCB Layout, 3D PCB Verification, PCBA, Soldering/Rework, Oscilloscope, Logic Analyzer

Debug / Tools: SEGGER SystemView/RTT, Serial Debugging, Simplicity Studio/WiseConnect SDK, Linux, Git, Python

PROJECTS

Portable RTOS-Based Decision-Support Terminal for Texas Hold'em

- Designed a custom SiWG917 PCB in Altium Designer: schematic capture, PCB layout, and 3D verification; brought up the JLCPCB SMT-assembled board via jumper-isolated power paths, current-flow verification, infrared thermal checks, and resistor/capacitor rework.
- Architected three prioritized FreeRTOS/CMSIS-RTOS2 tasks on SiWG917 Cortex-M4F: joystick (above-normal, 15 ms), MQTT/network (normal, 40 ms), and LCD UI (below-normal, 75 ms) on a 1 kHz tick.
- Protected shared state across tasks/MQTT callbacks with a mutex; kept LCD/Wi-Fi/MQTT work outside critical sections and used SEGGER SystemView to inspect context switches and blocking.
- Eliminated joystick lag/stuck directions by removing 280/180 ms auto-repeat delays and adding two-sample press/release debounce; reinitialized both ADC channels after two consecutive read failures.
- Adapted a bit-banged SPI ST7735 160x128 RGB565 display driver; connected GPIO vibration and event-driven JSON MQTT telemetry, with 5 s reconnect/resubscribe retries and a 1.2 s stuck-publish watchdog.

Interactive Tentacle Robot for Obstacle-Aware Interaction

- Wrote bare-metal ATmega328PB C firmware for US-100 UART sensing, dual-axis ADC/ESP32 input, and I2C PCA9685 control of three 50 Hz SG92R servos.
- Converted joystick Cartesian input to direction/amplitude and classified ultrasonic motion into four states to drive servo and LCD behavior.
- Diagnosed shifted joystick mapping via serial logs; corrected deadzone/threshold logic and verified PWM, UART, and power stability with an oscilloscope and logic analyzer.

F1/10 Autonomous Racing Car (Ongoing, Expected December 2026)

- Integrated ROS 2 autonomy modules with Hokuyo LiDAR/RealSense sensor inputs and validated real-time obstacle-response behavior in simulation and on a physical F1/10 car.

AXI-Lite Pipelined RISC-V CPU on ULX3S FPGA

- Implemented AXI-Lite handshakes/backpressure, pipeline control, branch flushing, and loads/stores; debugged timing/trace failures with cocotb/Verilator and verified ULX3S GPIO output by oscilloscope.

WORK EXPERIENCE

Simchip Technology

IC Test Engineer Intern

Shanghai, China

July 2024 - August 2024

- Built Vivado/Verilog FPGA screening testbenches to drive patterns and flag four-channel IC outputs against a 3 V pass/fail threshold; designed the workflow to support 10,000+ units.
- Isolated signal-integrity noise with oscilloscope/logic-analyzer captures and refined threshold/debounce logic to improve screening reliability.

Lenovo (Shanghai) Co., Ltd.

Junior Software Engineer Intern

Shanghai, China

June 2023 - September 2023

- Built Python/MySQL tools for internal engineering-data validation, cleansing, categorization, and search; ran backend integration tests for data consistency and workflow reliability.

PUBLICATIONS

Deng, Y., et al. "COBRA: Algorithm-Architecture Co-optimized Binary Transformer Accelerator for Edge Inference." ICCAD 2025, Best Paper Candidate.