Kenny Na

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Education

University of Waterloo — Waterloo, ON
Bachelor of Applied Science in Systems Design Engineering — *Sep. 2023 – Apr. 2028*

Experience

Electrical Engineering Intern — Sep. 2024 – Present
Waterloo Aerial Robotics Group — *Waterloo, ON*

- Designed a PCB integrating a 12V to 5V buck converter, LDO, and impedance-matched RF transceiver in Altium Designer for an ExpressLRS-compatible fixed-wing drone, supporting 2 motor controllers and 6 servo outputs.
- Simulated input filtering on buck converters with LTspice to prevent transient voltage spikes from source impedance.
- Designed a USB-C to XT30 sink to arbitrate up to 20V 5A for drone debugging, complying with USB-PD & 3.2 spec.
- Assembled and validated servo driver PCBAs using SMT reflow soldering, DMM, oscilloscope, and e-load.

Team Co-Lead — Jan. 2024 – Present
Waterloo Reality Labs — *Waterloo, ON*

- Founded the world's first collegiate XR design team to develop DIY hackable VR and AR headsets.
- Leading Varifocal, a custom VR headset with real-time focal length adjustment using voice coils and eye tracking.
- Created onboarding projects for new students, with Altium for EDA and Unity (Meta XR SDK) for software.
- Outreach for 400+ interested students, and raised over $5000 in sponsorship value for the team's first term.

IT Infrastructure & Operations Intern — Jan. 2024 – Apr. 2024
Grand & Toy — *Vaughan, ON*

- Managed 250+ computer users through Microsoft AD and GPO, using MMC to manage DHCP settings.
- Led deployment project for 100+ custom-imaged laptops using the Microsoft Deployment Toolkit.
- Utilized Trend Micro Apex One to remediate multiple cases of malware infection on employee PCs.
- Successfully resolved 100+ technical support tickets, contributing to a 27% increase in employee productivity.

Projects

Waterloo Reality Labs: VR Headsets | *Arduino, C++*

- Built an open-source, DIY VR headset with compatible eye-tracking that interfaces with SteamVR.
- Made a real-time camera-based eye tracker with an ESP32, OV2640, IR LEDs, and open-source tracking software.
- Upgrading to over 63% higher horizontal FOV by using custom-cut wide fresnel lenses and new displays.

Testing Contributor: RyzenAdj | *Linux, Clover Bootloader, ACPI Machine Language*

- Open-source program to control the TDP of Ryzen mobile processors, superseded by UXTU on GitHub (1.2k stars).
- Dumped DSDT from laptops and edited ACPI to modify AMD STAPM power limits, sideloading with Clover.
- Benchmarked power targets for the Ryzen 5 2500U using AMD uProf, measuring up to a 67% burst performance increase and up to 36% sustained performance increase.

3D Modelling & Automation | *Blender, Python*

- Designed 10+ 3D scenes with Blender, using Stable Diffusion for procedural & seamless UV-mapped textures.
- Wrote Python scripts to automate importing, scaling and positioning of 30+ random models within a scene.

Skills

Hardware: Power Electronics, Analog/Digital Design, PCB Layout, Schematic Capture, Simulation & Validation
Applications & Tools: Altium Designer, LTSpice, SOLIDWORKS, Blender, PlatformIO, Git, Linux
Languages & Protocols: C/C++, Python, HTML, CSS, JavaScript, MATLAB, I^2C, USB-PD, USB 3.2