Tenzin Norphel

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Education

University of California, Berkeley *Expected December 2025*
BS in Electrical Engineering and Computer Science

- **Coursework:** Machine Structures, Discrete Math and Probability, Integrated-Circuit Devices, Introduction to Robotics, Signal and Systems, Microfabrication, Control system and feedback, Robot Manipulation and Vision, and Artificial Intelligence, Internet Architecture/Internet of things (IoT), Cybersecurity, Application-Specific Integrated Circuits (An introduction to digital and system design)

Internships

Product & Research Intern *Remote*
Custex Inc. — Berkeley SkyDeck ACE Program *June- Aug 2025*

- Developed a Python-based Content Risk Analyzer that detects and categorizes high-risk text, including self-harm, abuse, and violent language.
- Worked on keyword-based detection pipelines, implemented structured logging in CSV, and built visual dashboards to track flagged activity over time.
- Created rules for identifying recurring high-risk patterns and generating automated alerts.

Project Intern *May – July 2021*
NASA – MCA (Mission Concept Academy)

- This mission was classified as a "Lunar Water-Ice Strategic Science Investigation," where our team (Amphilene) designed a small exploration mission concept for the permanently shadowed region (PSR) at the Lunar South Polar Region.
- Used Siemens CAD tools to design a Rover and RIMFAX payload deployment model, demonstrating how the payload detaches from the main vehicle and descends toward the lunar surface.
- Planned descent maneuvers and vehicle design specific to the moon's low gravitational environment and surface conditions.

Projects

3-Stage Pipelined RISC-V CPU—EECS 151 ASIC Project *Berkeley, CA*
Ongoing (Fall 2025)

- Designed and implemented a 3-stage pipelined RISC-V CPU supporting the base integer instruction set and CSR operations in Verilog.
- Built a functional ALU, pipeline control logic, and hazard resolution units; verified operation using SystemVerilog assertions and custom testbenches.
- Integrated the processor with a direct-mapped cache and SRAM-based memory interface to optimize instruction/data access latency.
- Used Skywater 130nm technology for backend synthesis, floorplanning, and timing closure in Cadence Innovus. Improved understanding of RTL design, hazard mitigation, and physical design flow, contributing to efficient low-latency RISC-V system architecture.

Custom MIDI Keyboard — Personal Project *Berkeley, CA*
August 2025

- Designed and fabricated a custom MIDI keyboard PCB integrating microcontroller-based key scanning and USB communication.
- Interpreted circuit schematics and created multi-layer PCB layouts in KiCad, defining component footprints, pads, and vias for optimized routing and manufacturability.
- Implemented grounding and decoupling strategies to minimize signal noise and ensure power integrity across the digital and analog domains. Performed board bring-up, continuity testing, and debugging using an oscilloscope and multimeter to verify correct signal paths and component operation.

Grasping Control using Multiple Joint dynamics with Contact *Berkeley, CA*
April 2025

- Designed IK solver and grasp synthesis for Allegro Hand in MuJoCo using Levenberg–Marquardt and force closure metrics.
- Developed a high-reliability autonomous grasping system (IK, control, and force closure), directly relevant to improving cycle time and reducing failure rates in commercial pick-and-place automation and dexterous manipulation tasks.

Microfabrication Technology *Berkeley, CA*
April 2025

- Fabricated NMOS devices from bare silicon wafers over a 12-week cleanroom process flow.
- Performed photolithography, gate oxidation, ion implantation, contact etch, and metal deposition. Characterized resistors, capacitors, MOS capacitors, and long-channel NMOS transistors.
- Gained end-to-end expertise in fundamental silicon process technology (CMOS/NMOS flow) and device characterization, enabling rapid comprehension of yield-critical manufacturing steps.

SIMD and MIMD Parallelism *Berkeley, CA*
August 2025

- Analyzed and compared SIMD (Single Instruction, Multiple Data) and MIMD (Multiple Instruction, Multiple Data) execution models for parallel computing.
- Implemented parallel tasks in C using OpenMP to evaluate throughput and performance gains under each model.
- Investigated the trade-offs between hardware simplicity, flexibility, and execution speed across different parallel architectures.

Logisim-Based CPU Design *Berkeley, CA*
July 2025

- Designed and implemented a 5-stage pipelined RISC-V processor in Logisim. Verified design using testbenches and cycle-accurate simulations.
- Built the CPU from basic logic gates and registers, demonstrating a deep understanding of computer architecture.

Performance Optimization in C/RISC-V *Berkeley, CA*
July 2025

- Applied OpenMP for parallelization across multiple cores to accelerate performance-critical sections.
- Benchmarked serial vs. parallel versions to analyze speedup, cache behavior, and thread efficiency.

Modular Snake Game in C *Berkeley, CA*
February 2024

- Built a terminal-based Snake game in C using modular programming practices across multiple source files and header files.
- Applied concepts of memory management, pointer arithmetic, and struct-based design.

Functional Programming & Game Strategy *Berkeley, CA*
October 2023

- Developed a complete turn-based dice game ("Hog") in Python using functional programming principles and higher-order functions.
- Implemented dynamic game rules, scoring strategies, and commentary logic using closures and function composition.

Leadership & Extracurricular Activities

Retail Associate *April 2022 – Present*
Ross Stores, Inc.

- Maintained high awareness on the sales floor to ensure a safe and secure shopping environment for all customers.
- Understood that safety is the number one priority and consistently practiced safe behaviors.
- Maintained a professional appearance and adhered to company dress code at all times.

Aquatic Assistant *May – August 2022*
El Cerrito Swim Center

- Performed tasks necessary to provide customer service and administrative support at the aquatic facility.
- Responded to patron inquiries regarding programs and schedules at the Swim Center.
- Supported Lifeguard Staff in responding to emergency situations.

Cashier *September 2021 – September 2022*
(Berkeley Thrift Store)

- Welcomed customers, answered questions, helped them locate items, and provided advice or recommendations.
- Operated scanners, scales, cash registers, and other electronics.
- Balanced the cash register and generated reports for credit and debit sales.

Tutor Assistant (Volunteer) *April – November 2021*
LEAP — Literacy for Every Adult Program

- Assisted as a one-to-one tutor, teaching assistant, and front-desk receptionist.

- Tutored GED, Algebra, Trigonometry, Science (Biology, Chemistry, Physics), English, and other academic subjects.
- Helped students with exam study guides and navigating course platforms.

Community Volunteer *November 2020 - July 2025*
Tibetan Association of Northern California (TANC)

- Assisted in organizing large cultural events, ceremonies, and community gatherings attended by hundreds of community members.
- Helped coordinate programs for youth, seniors, and Tibetan families, supporting logistics, registration, seating, and event flow.
- Volunteered during the COVID-19 period by helping with community check-ins, vaccination support logistics, and maintaining safety protocols.
- Supported TANC scholarship outreach events and assisted students and parents with application guidance and documentation.
- Helped prepare venues, set up equipment, distribute food, guide guests, and ensure events ran smoothly and safely.
- Participated in community-based projects as part of the TANC Scholarship requirements, contributing 30+ hours to service initiatives.

Scholarships

Tapia Scholarship Recipient & Conference Attendee *Sept 2025 – Sept 2026*
CMD-IT Tapia Conference — Gaylord Texan Resort, Texas

- Selected as a scholarship recipient to attend the 2025 CMD-IT Tapia Conference, one of the largest national conferences celebrating diversity in computing.
- Participated in the Student Professional Development Workshop (SPDW), including resume workshops, mock interview preparation, and two industry-led panels focused on software engineering careers, effective resumes, and successful interviews.
- Received personalized resume review and mentorship from industry professionals in software, AI, cybersecurity, and research.
- Attended technical sessions and panels on artificial intelligence, large language models (LLMs), software development, industry trends, and DEI initiatives in tech.
- Networked with researchers, engineers, faculty, and company representatives during the Career Fair and mentorship sessions.
- Conference events attended: September 11–13, 2025, at the Gaylord Texan Resort & Convention Center, Texas.

TANC Scholarship with Betsy Gordon Foundation *Award Cycle: 2021–2022, 2022 - 2023, 2023-2024, 2024-2025*
Scholarship Recipient

- Recognized for academic achievement and extensive service to the Tibetan community through cultural, educational, and youth-support activities.
- Assisted with organizing community ceremonies, cultural celebrations, prayer gatherings, and large public events for Tibetan families.
- Supported community programs by helping with registration, setup, cleanup, guiding attendees, distributing food, and ensuring smooth event operations.
- Volunteered across multiple community initiatives, including youth education support, senior assistance, and outreach during the COVID-19 response period.
- Completed over 30 hours of community service as part of the scholarship, including helping with membership renewal, administrative support, and community-based projects.

Skills

Hard Skills:

- Verilog (HDL), Application-Specific Integrated Circuits (ASIC), RTL Design (Register Transfer Level), Cadence/Innovus, Floorplanning and Place & Route (P&R)
- PCB Design (schematic capture, layout, DRC verification) using KiCad and Altium
- MATLAB, ROS (Robot Operating System), Python, Sentaurus TCAD (Synopsys), C/C++, Java
- RISC-V Assembly, OpenMP, Git, GDB, Valgrind, Keysight EasyEXPERT
- CAD (Computer-Aided Design), Multi-joint Dynamics with Contact, Control Systems, IoT (Internet of Things), and Cybersecurity/Cryptography

Soft Skills:

- Strong problem-solving and analytical thinking developed through ASIC and robotics design projects
- Collaboration and teamwork from cross-disciplinary projects integrating hardware, software, and control systems
- Adaptability and perseverance under fast-paced technical environments
- Excellent verbal and written communication, including technical documentation and presentations
- Leadership and mentoring experience through lab and team coordination roles