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Noah Sedlik

Computer Scientist & Electrical Engineer

University of California, Berkeley
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Education

University of California, Berkeley **Aug 2021 – Aug 2025**
B.S. Electrical Engineering and Computer Science (EECS) **GPA 3.67/4.0**
Tau Beta Pi Engineering Honor Society
Mira Costa High School, Manhattan Beach, California **Aug 2017 – Jun 2021**
Summa Cum Laude, National Honor Society, Tri-M Music Honor Society, Honor Roll **GPA 4.31/4.0**

Skills

Electrical Engineering	Digital Logic (Xilinx Vivado), Analog Circuits (LTspice), PCB Design (Altium, KiCad)
Software Engineering	Functional and Object-Oriented Programming, Algorithmic Optimization, Concurrency, Database Systems, Operating Systems, Computer Security, Test-Driven Development
Programming Languages	Python, C, RISC-V, x86 Assembly, Verilog, Rust, Java, JavaScript, SQL, Docker, Git

Experience

EECS Course Staff @ UC Berkeley College of Engineering **Jun 2024 – Aug 2025**
Head Teaching Assistant – CS 61C Machine Structures Berkeley, CA
- Directed teaching assistants for core computer architecture course covering C programming, RISC-V assembly, pipelining, cache design, virtual memory, and concurrency
- Delivered technical lectures on concurrency, performance optimization, and cache-aware programming to 380 students
- Designed low-level programming assignments involving RISC-V datapaths, memory hierarchies, and synchronization primitives

Full-Stack Development @ Boolient **Jun 2023 – Aug 2023**
Software Engineer Intern Palo Alto, CA
- Built and optimized backend systems in Python and PostgreSQL, focusing on performance and data preprocessing

College Prediction Application @ Astabel **Jun 2022 – Aug 2022**
Full-Stack Developer Berkeley, CA
- Built cross-platform Python + MySQL application from ideation to deployment with data analysis and ML algorithms

UI/UX App Design @ GamerSafer **Jun 2022 – Aug 2022**
UI/UX Engineering Intern
- Collaborated with engineering team to propose and execute new design changes using Figma, resulting in increased user engagement and more welcoming user experiences
- Worked closely with frontend and backend engineers to explore inclusive design solutions

STUNT Committee @ University of California Marching Band **Feb 2023 – Feb 2025**
Assistant Drum Major and STUNT Lead
- Created, designed, and choreographed the “Funk Disco” Halftime Show, performed for 36,000 fans and broadcast on national television during Pac-12 football game
- Taught five-day training program for 34 Teaching Assistants on how to instruct new marchers
- Led form clinics and daily rehearsals to improve the marching abilities of 240 members

Cybersecurity Club @ Mira Costa High School **Aug 2017 – Jun 2021**
Team Manager, Team Captain, Chair of Communications
- Organized and prepared 14 teams for multiple cybersecurity competitions.
- Delivered lectures on Linux system administration and cybersecurity practices to the club’s 70 members.
- Created detailed “attack plans” for securing computers and servers running Debian-based operating systems.

Marching Band @ Mira Costa High School **Aug 2017 – Jun 2021**
Hornline Captain, Saxophone Section Leader
- Supervised and instructed the woodwind sections on musical expression and choreography.
- Led musical and visual rehearsals for the band’s 80+ members.

Projects

RISC-V Saturn Core System-on-Chip (SoC) Tapeout **Spring 2025**

- Contributed to tapeout of a 500 MHz multi-core RISC-V system on Intel 16nm SoC technology for DSP and ML workloads
- Led architectural configuration and design-space exploration to evaluate cache hierarchies, core parameters, and accelerator configurations under area, power, and frequency constraints, recovering ~100 MHz through configuration and constraint tuning
- Developed Python tooling to evaluate cycle counts, performance scaling, and PPA tradeoffs across multiple SoC configurations
- Built software workloads (real-time audio recognition pipeline) to exercise accelerators and validate end-to-end system behavior

TideWise – Embedded Wearable for Posture Classification **Jan 2026**

- Developed bare-metal firmware on Tuya T5QN88 (Arm Cortex-M33F @ 480 MHz) under 8 MB flash and 16 MB PSRAM constraints
- Implemented interrupt-driven touch and haptics with ISR-level debouncing and deferred timer control for ~50 ms latency
- Integrated GPIO/PWM-based haptic control while enforcing non-blocking main-loop execution under concurrent events
- Drove system-level decision to offload ML inference over Wi-Fi (MQTT) due to flash and RAM constraints

ASIC 3-Stage RISC-V Processor **Spring 2024**

- Designed and physically implemented a 3-stage RV32I CPU in Verilog, closing timing at ~50 MHz post-PAR in SkyWater 130 nm
- Integrated a 4 KB direct-mapped, write-back cache using synchronous SRAM macros with a multi-state FSM
- Built an earlier FPGA prototype (Xilinx PYNQ) of the same architecture for software bring-up and UART-based program execution

Pintos Operating System Enhancements **Spring 2024**

- Extended the Pintos educational operating system in C and x86 assembly using GDB and QEMU
- Implemented user-level threading primitives including locks, semaphores, and condition variables
- Designed file system buffer cache to increase speed of disk and memory operations by ~5x under benchmarked workloads

MapReduce Distributed System Coordinator (Rust) **Spring 2024**

- Built fault-tolerant coordinator for scalable and highly parallelized data processing following the MIT MapReduce framework
- Developed API for coordinating worker cluster with open-source Remote Procedure Call framework (gRPC)
- Handled worker and job failures through task redistribution and heartbeat remote procedure calls

FPGA Audio Synthesis and Sequencing (Verilog) **Spring 2024**

- Developed square wave generator on an FPGA with support for linear and exponential frequency adjustments
- Integrated FPGA I/O peripherals to control frequency and audio output
- Combined generator and peripherals with Finite-State Machine (FSM) note sequencer and Numerically Controlled Oscillator (NCO) to produce variable-frequency sine waves

Cryptographic File Sharing Database (Golang) **Fall 2023**

- Developed encrypted file-sharing platform with secure user authentication, file storage, and collaboration functionalities
- Integrated AES-CTR and RSA file encryption, HMAC tamper-detection, KDF algorithm for key management scheme, and Argon2 password hashing to prevent side-channel attacks for robust security framework

PCB Bandpass Filter Visualization **Spring 2023**

- Developing and fabricating two-layer Printed Circuit Board to visualize effects of controllable bandpass filter
- Programming ESP32S microcontroller unit to perform LED Matrix I/O and process microphone signals with FFT algorithm

Multithreaded Word Search Optimization **Spring 2023**

- Developed program with C Standard Library to efficiently search a randomized list of 100,000 words across multiple files
- Enhanced performance with multithreading, OpenMP instruction-level parallelism, and cache optimizations

Voice-Operated Remote-Control Car **Fall 2022**

- Constructed encoder circuits, amplifiers, and microphone board regulators using NPN BJTs, diodes, and coupling capacitors
- Programmed linear control models based on least squares regression and PCA classification for audio command recognition

Gitlet Version Control System (Java) **Fall 2022**

- Applied object-oriented design patterns and test-driven development to recreate the Git version-control system.
- Developed methods for commit persistence and efficient data retrieval using linked lists, hash tables, and directed acyclic graphs.

Awards

Honors Distinction – University of California, Berkeley — Fall 2021 – Fall 2022
Dean's List, Honors of Engineering – University of California, Berkeley — Fall 2021
AP Scholar with Distinction — CollegeBoard — Spring 2021
Leadership Award – University of California, Berkeley — Fall 2021
1st Place Intermediate Division (California) — Cyber Innovation Challenge @ Cal Poly SLO — Fall 2020

1st Place Novice Division — Code Quest 2019 Spring 2019

Scholar Athlete Award — Mira Costa High School Fall 2017-2021

Performer of the Year — Mira Costa High School Marching Band Fall 2020