

JACOB ZOLDA

Computer Engineer | Creative Technology

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PROFILE

Computer engineer and U.S. Navy veteran who builds embedded and real-time systems where technology meets creative media. Hands-on experience spanning live-performance robotics, wearable signal-processing platforms, various programming projects, and cinematic production. Seeking an engineering role in the film or video-game industry where technical depth supports creative storytelling.

EDUCATION

Drexel University Philadelphia, PA

June 2026

Bachelor of Science, Computer Engineering GPA: 3.10 / 4.00

Relevant Coursework: Embedded System Design, Data Structures, Parallel Programming, Computer Architecture, Processor Design, Linear Algebra

Creative Courses: Cinematography, Game Scripting, Motion Capture, Film Studies, Screenwriting, Game Writing

TECHNICAL SKILLS

Programming: Python, C, C#, C++, CUDA, HDL

Hardware: Arduino, ESP32, FPGA, stepper motors & drivers, AC/DC circuits, Raspberry Pi, TI microcontrollers

Signal Processing: Real-time DSP for biometric analysis, signal decomposition, artifact mitigation

Tools & Workflow: Git / GitHub, VS Code, Onshape, Linux, Unity, Unreal Engine, Vicon/Shogun, DaVinci Resolve, Final Draft 13, Max/MSP 9, PyQt GUI

PROJECTS

Vox Ex Machina - Lead Electronics Engineer & Circuit Designer

ExCITe Center · 2025

- Designed and built a robotic art machine that translates live sound into visual art, performed on the main stage of the Academy of Music for Opera Philadelphia's 50th Anniversary Gala.
- Engineered a 3-axis motion-control system (NEMA 17 steppers, TMC2209 driver, Arduino Mega) with synchronized multi-belt movement.
- Integrated the machine with Max/MSP 9 for real-time, audio-driven control, bridging engineering and live performance.
- Iterated through multiple prototypes, including 3D modeling, circuit prototyping, and a final permanent protoboard design.

Bio Band - Wearable Physiological Monitoring Platform

Senior Design · Software Lead

- Led software signal processing for a wearable device capturing electrodermal activity (EDA), heart-rate variability (HRV), temperature, and motion for real-time biofeedback.
- Built a Python / NeuroKit2 pipeline performing tonic/phasic EDA decomposition, artifact mitigation, and real-time visualization.
- Developed a PyQt GUI as the application hub for use with ESP32 and sensors.

Projects - Programming

Coursework

Data Structures (C)

- Built foundational data structures and algorithms from scratch with explicit memory management.
- Implemented a Huffman compression encoder and a breadth-first-search solver using a custom queue.

Parallel Programming (pthreads / CUDA)

- Parallelized compute workloads with pthreads, including a SAXPY kernel and a particle-swarm optimization solver synchronized via thread barriers.
- Wrote CUDA kernels for GPU acceleration: trapezoidal numerical integration using a shared-memory tree reduction with atomic accumulation, a box-blur image filter, and a separable Gaussian convolution optimized with shared-memory tiling.

Processor Design (C)

- Built trace-driven architecture simulators: a branch predictor with 2-bit saturating counters and a configurable set-associative cache.
- Implemented advanced microarchitecture models including the SHIP cache-replacement policy and a DRAM memory controller with multi-bank parallelism and request-queue scheduling.

EXPERIENCE

ExCITe Center Philadelphia, PA

May 2023 - March 2025

Digital Navigator

- Repaired and distributed 150+ desktops and laptops for community technology-access programs in West Philadelphia.
- Provided hardware replacement, debugging, OS installation, and end-user technical support at West Philadelphia Community Center.
- Collaborated with an interdisciplinary team to expand access to low-cost internet, computers, and digital-skills education.

Toshiba Global Commerce Solutions Jacksonville, FL

Jan 2022 - Jul 2022

Field Service IT Technician

- Independently maintained retail store technologies, computer systems, and peripherals within store and commercial business environments. Performed a full workload of product installation, support services, and repair on electronic retail devices and in the store systems.
- Accountable for customer satisfaction, inventory, and operational activities as required for the services provided.

U.S. Navy USS The Sullivans

Oct 2015 - Oct 2021

Electronics Technician

- Served aboard USS The Sullivans, maintaining surface-ship exterior communications, radar / air-detection, navigation, and cryptographic equipment; supervised six junior technicians and ensured operational readiness.
- Awarded two Navy Achievement Medals for exceptional service and repair of high frequency radio communications pre-deployment; and critical data link systems in a joint multinational strike group.

ARH Associates Hammonton, NJ

Oct 2014 - Sep 2015

CAD Technician

- Produced and corrected civil-engineering and surveying drawings in AutoCAD, refining survey maps for tax-mapping and routing projects.

HONORS & CERTIFICATIONS

- Two Navy Achievement Medals — exceptional technical service and equipment repair.
- Commanding Officer recognitions: Gold Standard Technician, Comprehensive Expertise, Enthusiastic Trainer, Respected Leader, Outstanding Technician Operating at a First-Class Level, Strong Technical Acumen, Adept Technician.
- Professional training: Data / Satellite / Electronic Communications, Network Essentials, Digital Electronics, Communication Security, AC/DC Circuits, Industrial Safety, Financial Management, Conflict Resolution, Diversity & Inclusion.