

JACK QIU

PROTOTYPE ENGINEER — MECH x SW x ROBOTICS

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§1 EXPERIENCE

Software Engineer — Woven by Toyota Apr 2022 – 2026

- Vehicle Design Module: designed, built, and deployed vehicle-architecture software (Next.js, Tailwind, React Flow) from prototype to full production with users; led the frontend team through development and hardening sprints.
- Reactor Studio: built driving-simulation tooling around the ASAM OpenSCENARIO package in React, including modded road visualizations.

Founder & Engineer — PixelVerse — thepixelverse.io 2025 – Present

- Building a persistent pixel world inhabited by autonomous AI agents: Next.js on Vercel, Supabase, and an LLM agent runtime, with live dashboards for world activity, capacity, and cost.

Hardware Prototypes — Independent Ongoing

- terrE telepresence rover (Pi + PCA9685 servo drive over I2C, Socket.IO teleop from React) and Duelists motion-sensing swords (MPU6050 IMU @ 100 Hz, custom PCB, realtime scoring + broadcast overlays).

Software Engineer — Loadouts.me Feb 2020 – Sep 2021

- Designed, built, and deployed a mobile-optimized web app (React, Node, AWS); Appworks accelerator, Taipei.
- Prototyped airsoft hit-scoring hardware with piezoelectrics and Raspberry Pi (Node, Socket.IO, React, OBS), demoed live on Twitch.tv.

Software Engineer — EMX Digital Apr 2018 – Feb 2020

- Built seller-planning and video-ad-testing tools (React, Redux); led redesign of the in-house JavaScript VPaid script, cutting total size by two-thirds while improving error transparency.
- Moved report generation from ECS to Fargate with Lambda + SQS to cut costs; designed the Postgres schema for the ad-campaign management tool; supported GraphQL-backed survey and realtime analytics dashboards.

Software Engineering Intern — Amper Technologies 2017

- Built a React-Redux frontend for secure client data retrieval, coordinating API integration with the backend team.

Mechanical Engineer — Intralox 2016 – 2017

- Designed an all-sheet-metal accumulation conveyor for automotive paint-line skids in SolidWorks to a 0.5 m customer height limit; machined 304 SS drive shafts.
- Built a piston + load-cell test rig and Python force-distribution model of conveyor belts under variable loads to identify surge modes, motivating patched belts that extend fatigue life.

Undergraduate Researcher — Northwestern NXR Lab

- Machined the force sensor behind the publication Dynamics of Ultrasonic and Electrostatic Friction Modulation; designed a 2 kHz finger tracker backed by a \$5,000 McCormick grant.

§2 EDUCATION

B.S. Mechanical Engineering — Northwestern University, McCormick 2016

Advanced Software Engineering Immersive — Hack Reactor, San Francisco 2017

Professional Certificate, ML & AI — UC Berkeley 2025

§3 AWARDS

- Best Design (Exercise Apparatus) — Segal Design Institute Design Expo, for The Cranken, a resistance trainer operable by a wheelchair user with limited grip.

§4 BILL OF MATERIALS

01	MECHANICAL	SolidWorks (incl. sheet metal) · 3D printing (FDM) · machining (mill & lathe) · fits, tolerances & assemblies
02	ELECTRICAL	PCB design · I2C / PWM / UART · IMUs, servos, load cells & DAQ
03	FIRMWARE	Python on Raspberry Pi · Arduino C/C++ · realtime control loops
04	SOFTWARE	JS/TS · React & Next.js · Node · Tailwind · Socket.IO · Postgres & MongoDB · AWS · Vercel
05	AI	LLM agent systems · Claude API · autonomous agent worlds