Matt Ji

Systems & Security Engineer

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Most of my working life has gone into making operational data usable. I ran asset management for a solar portfolio above $100M for four years: yield models that passed bank audits, mobile field capture, and telemetry reconciliation when sensors went missing. Since 2023 I have run thirteen NixOS hosts from one flake, with an SSH certificate authority and encrypted secrets per host. The free hours go to CISA's KEV catalogue, building tools that turn the exploited list into a patch order a team can work through.

Experience

bountystash: deterministic work engine — Founder and engineer · 2020 — 2025

A request arrives as prose and has drifted by the time the work is done. I built a Go service that records it as an immutable document, so a job's state replays a month later and two people can agree on what was asked. One binary serves HTML, JSON and a terminal UI.

Energy telemetry and valuation — Asset manager, O3 Energy · 2016 — 2020

Four years running the numbers behind a solar portfolio above $100M: yield and valuation models that satisfied bank auditors, mobile capture for field technicians, and a reconciliation step that turned a dead sensor into a known error instead of a good month.

Smart Energy 360 — Director of Sustainability · 2015 — 2016

Built and ran a project pipeline above $100M for commercial clients moving to cleaner electricity, with the sustainability strategy and the risk advice that went with it.

Fraunhofer ISE — Research assistant · 2012

Measured heliostat imperfections with interferometry: C++ for the instrument, Python for analysis and 3D geometry.

Halliburton — Associate Technical Professional · 2010 — 2011

Two frac crews in the Bakken shale: chemicals and equipment faults fixed on site, twelve-hour shifts, and the safety training for the crew.

Projects

Vulnerability operations concept — 2026 — now
A sample vulnerability programme built from KEV data: an exposure table, effort clusters, a 90-day method and a service model. Sample data throughout, labelled as such.

matt.bountystash.com — 2026 — now
Personal site: two languages from one template, a CV rendered from the same JSON, and no third-party scripts.

kelly-svg — 2026 — now
KEV entries grouped into effort clusters with exposure per cluster, giving a patch order that follows effort and reach instead of the order the catalogue happens to use.

kev-time — 2026 — now
CISA's Known Exploited Vulnerabilities catalogue drawn as a time series in static SVG, so a trend is readable before a report exists and the page still loads on a phone during an incident.

nixconfig — 2023 — now
Thirteen NixOS hosts rebuilt from one repository: certificates, per-host secrets and the operator commands come from the same place, and the same check runs in CI and before a deploy.

fibtransponder — 2026
A Fibonacci-radix state machine that streams a bitstream with bounded work per step. A corpus benchmark falsified the first detector design, so the claim narrowed.

Education

Master of Science, Renewable Energy Management, University of Freiburg · 2011 — 2014

Bachelor of Science, Petroleum Engineering, Colorado School of Mines · 2006 — 2010

Skills

Systems and concurrency: Go, channels and state machines, PostgreSQL, Redis, gRPC and REST, Kafka, Python

Declarative infrastructure: NixOS, Nix flakes, SSH certificate authority, SOPS and age, Tailscale, ZFS and btrfs, systemd, CI gates

Domain: asset valuation, solar telemetry reconciliation, risk models, bank audit reporting, KEV and CVSS, vulnerability programme design, Typst

Languages

English (native), German (B2)

US citizen with German permanent residence; no sponsorship or relocation needed