Jess Sullivan

Agent Orchestration · Computer Vision · Full Stack Engineer · DevSecOps · ML/HPC

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Languages	ML/AI & HPC	Infrastructure
Python (10+ yrs, enterprise)	Fine-grained classification	CI/CD pipelines (expert)
TypeScript (fluent)	Horizontal parallelism in ML/AI	Global-scale deployments
Chapel (expert)	WASM-native inference	Realtime & time-series pipelines
Futhark, Haskell	Compiler backends (WebGPU/WGSL)	Kubernetes orchestration
SvelteKit (SOTA)	MLOps & model evaluation	Agent federation

Experience

Full Stack Contracting and FOSS *(Ongoing)*

Ongoing contributor and community member of numerous open source projects including—and not limited to—**Futhark** (WebGPU/WGSL compiler backend), the **Apache Foundation** (Solr web security), **Caddy**/xcaddy, **libdns**, **SearXNG**, `Skeleton UI`, **Klipper**, **Joplin**, **FFT.js**, **KeePassXC**, `svelte-superforms`, the **Rocky Enterprise Linux Foundation** (Community Team, Kernel SIG, AltArch SIG), **Liqo** (K8s topology fabric, used by CERN), along with authoring numerous FOSS automation tools, libraries and open source utilities. Expanded client list and customer references available upon request.

- Startup work: **Dover Micro** (2017), **Adaptive Motorsport** (2018)
- Web GIS tools for **National Park Service**, **Foundation for Healthy Communities**, **GPRED**, **Northern Border Regional Commission**. Presented at 2019 **AAG conference**.
- Fine-grained image classification with **MushroomObserver.org** and **Visipedia**; early adopter of CNN-based species ID at scale.

Current stack:

- **Web:** `SvelteKit` (Runes), `Bun`, `Vite 8` (Rolldown), TS7. Proprietary SvelteKit libraries for fingerprinting, auth, mapping, telemetry.
- **HPC:** `Chapel`, `Haskell`, `Futhark` (WGSL/WebGPU). Performance-oriented systems and property-based testing.

Learning: `Nix`, `Rust` (SIMD), `WGSL` compiler internals, deeper WASM integration.

Systems Analyst (DevSecOps) @ Bates College *(2024–Present)*

Scalable enterprise systems supporting staff, faculty, and ILS team. Legacy modernization; bespoke Ansible extensions/roles/plugins; 24/7 CVE mitigation; SAML and application interoperability; OpenTelemetry reporting; CI/CD pipelines (GitLab AutoDevOps, OpenTofu, RKE2 + Rancher); leading IaC adoption college-wide.

Noteworthy projects:

- Developed high performance orchestrator and instrumentation tooling for degree management and degree auditing software in `Haskell` + `Python` (QuickCheck, Cabal, podman-compose for development, FPM for packaging and autodevops for CI/CD); uplifted "unautomatable" 1980s morris-worm era code unique to higher ed into a verifiable, traceable, k8s friendly workload
- Overhauled and completely automated the lifecycle of our event management system (extensive development in `C#`, `Go`, `Ansible`)
- Led adoption of horizontally scalable `Apache Solr` instances for multiple public and private indexing and search applications
- Led adoption and built out numerous internal ACME-first certificate management and DNS libraries, templates and tooling
- Extensive work and peer education around enterprise secret management patterns and SAML at the college. Developed numerous SAML integrations, LTI integrations, Shibboleth and led adoption of `KeePassXC` as part of a declarative Ansible workflow.

Fabrication Laboratory Manager @ Cornell CALS *(2021–2022)*

Developed and taught rapid fabrication curricula. `OpenSCAD`, `Fusion 360`, `Inkscape`, `C++`. GitHub/Linear project management.

Computer Vision Software Engineer @ Macaulay Library, Cornell Lab of Ornithology *(2018–2022)*

Developed & launched Merlin Sound ID, a production fine-grained audio classification system now used by millions worldwide. Led R&D on internal ML annotation tooling, model evaluation APIs, and end-to-end MLOps pipelines. Built real-time inference demos deployed at scale.

Stack:

- **Model Training:** Python (`TensorFlow`, `NumPy`, `Pandas`, `Matplotlib`, `Jupyter`)
- **Web & Inference:** `Flask`, `TypeScript`, `React`, `Vue`, `Docker`, `WebAssembly`, `React Native`, `Swift`
- **Infrastructure:** EC2, Heroku, BitBucket CI/CD, production model deployment at scale

Volunteer & Community

First Fellow @ D&M Makerspace, Plymouth State University *(2017–2020)*

Taught **Advanced GIS Programming** & **Intro to Electromechanics**. COVID-19 response: coordinated regional makerspace network for medical PPE manufacturing.

Membership Chair & 3D Printing Captain @ Ithaca Generator *(2020–2022)*

Led 501(c)(3) makerspace through rapid growth; coached hundreds via "Fusion 360 for 3D printing" series.

Business Ventures

xoxd.ai *(2024–present)*

Massively parallel, provable, **ownable** agent infrastructure. Currently seeking funding and in stealth.

Architecture: 5 bespoke SLMs, 130+ callable tools, full IaC lifecycle coverage via multicloud harness. Horizontal scaling with Chapel-based parallelism.

Components:

- **Huskycat** — Multithreaded githook SLM for PBT, linting, formatting, verification. Builds for Apple Silicon and Rocky.
- **Outbot** — Repo management SLM. Zoned summaries, conflict resolution, upstream PR analysis. Python with composable factory architecture.
- **FuzzyBot** — Chat TUI (Chapel + Go) with IntelliJ/Emacs integration, git-aware identity, Solr-backed memory and SAE offloading.
- **Mariolex** — K8s-native harness for model hosting, tool dispatch, fuzzing, indexing, PBT, and agent federation. Chapel + Go. Liqo-based multicloud topology.

Tinyland.dev, Inc *(2024–present)*

Tinyland is big, more to come very soon. Funded hackerspace initiative. Currently in stealth mode.

Previous: **Columbari.us LLC** (2017–2021) — GIS & ML contracting for UNH, NH municipal, Cornell.