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# Jess Sullivan

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

Python (10+ yrs, enterprise)  
TypeScript (fluent)  
Chapel (expert)  
Futhark, Haskell  
SvelteKit (SOTA)

## ML/AI & HPC

Fine-grained classification  
Horizontal parallelism in ML/AI  
WASM-native inference  
Compiler backends (WebGPU/WGSL)  
MLOps & model evaluation

## Infrastructure

CI/CD pipelines (expert)  
Global-scale deployments  
Realtime & time-series pipelines  
Kubernetes orchestration  
Agent federation

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## 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

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### 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

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### 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.

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