

MONICA SPISAR, PhD

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machine learning research / software & data engineering

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TECHNICAL INDIVIDUAL CONTRIBUTOR EXPERIENCE

Machine learning software engineer: AI alignment @ Softmax, USA 2025 - current

- Softmax develops multi-agent reinforcement learning simulations focused on social learning scenarios.

Machine learning engineer | Software engineer: participant @ Recurse Center, USA 2021 & 2024

- Built and evaluated transformer neural networks, convolutional neural networks, generative adversarial neural networks in Python, PyTorch. Speed-ran ARENA materials: basics of mechanistic interpretability for the transformer architecture.
- Built a neural network from scratch in Python for a blog post on design considerations driving the multilayer perceptron architecture and stochastic gradient descent.
- Built a Rust ray tracer. Wrote a blog post on memory management in Rust.
- Built a Python ray tracer. Completed Python for Data and Computer Science - MIT 6.000

Software engineer | Data engineer: censorship circumvention software @ Lantern, USA 2022 - 2024

- Member of a technical team responsible for delivering a globally distributed service to millions of concurrent users.
- *Data engineering & analytics* - Designed and built a real-time data pipeline: OpenTelemetry instrumentation and collectors streaming to GCP/BigQuery, monitored with Honeycomb, Datadog; the system handled peak throughputs of 1.5 MiB/s reliably. Conducted a data warehouse migration: Rockset to GCP/BigQuery. Optimized for efficient, cost effective querying of terabytes of data. Reduced data storage and processing costs by 50%. Instrumented a substantial codebase to emit observability and usage data; improved outage recovery times. Created metrics and dashboards to support developer, infrastructure, business, and client services teams.
- *Backend & Infra* - Wrote code for core services. Configured, deployed services to cloud providers. Monitored performance.
- Worked with Go, Python, Rust, GCP, Docker, Terraform, OpenTelemetry, Superset, Looker, BigQuery, Honeycomb, Datadog.

Research engineer | Data scientist: medical devices @ Kardium (Employee #16), Canada 2008 - 2011

- *Device delivery guidance* - Led deployment imaging for a class III medical device for transcatheter mitral valve repair. Integrated multiple medical imaging modalities to meet requirements for accurate catheter delivery guidance.
- *Product R&D* - Led device performance characterization (computer simulations, lab), preclinical trial design, initial clinical evaluation for a class II device for sternal closure. Field research: observed coronary artery bypass surgeries and cath lab procedures, worked closely with expert clinicians to define specs (performance and UX).
- *Patents* - 8888791, 9700363

LEADERSHIP EXPERIENCE

Portfolio Manager | Scientific Liaison: Longevity bioscience research @ University of Oxford 2019 - 2021

COO: Industry-focused geoscience research unit @ University of British Columbia 2013 - 2015

Program Manager & Industry Grants Officer: Industry liaison @ University of British Columbia 2011 - 2013

SOFTWARE SKILLS

- *Machine learning*: PyTorch, Pandas, scikit-learn, NumPy, SciPy, matplotlib, MATLAB, LangChain, MCP
- *Data*: PostgreSQL, Redis, BigQuery, dbt, Cosmos, Airflow, OpenTelemetry, Looker, Honeycomb, Datadog
- Python, Go, Rust, SQL, TypeScript/JavaScript, React, Node/Next.js, FastAPI/OpenAPI
- GCP, AWS. Docker, Terraform. Git, shell/Bash. Claude Code, GitHub Copilot

PERSONAL PROJECTS & WRITING — *sampled from github.com/msyvr & monicaspisar.com*

Code - AI safety forecasting | Data extraction from text | Neural network | OpenTelemetry Collector + exporter

Blog - Designing neural networks | OpenTelemetry Collectors for all | Rust: Memory management

EDUCATION

PhD, Biomedical Engineering (Medical Imaging), University of Michigan, USA

Publications - Google Scholar, ResearchGate

BSc, Physics, University of Toronto, Canada