Kyle DeProw

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Skills

- Python | C++ | C | Rust | R | Lua | Matlab | Ada | Fortran | Pytorch | Tensorflow | TFLite | Jax | SQL | PostgreSQL | NoSQL | Git
- Azure | Cloud Computing | CI/CD | Docker | Kubernetes | Ansible | Terraform | Spark | Airflow | ETL | Sharding | Quantization | A/B Testing
- Time-Series Analysis | NLP | GenAI | LLM Finetuning | XAI | Transformers | CNN | Splunk | SIEM | ELK | Ida Pro | Ghidra | nmap

Experience

Senior Machine Learning Engineer — **Boeing** — *Berkeley, MO* — **12/2021 - Current**

- Led the design and development of multiple cybersecurity services for defense and commercial platforms driving the defense strategy for a combined $16 billion portfolio built using the latest technologies of **Azure, Elastic, Azure Functions**, **Spark, LLMs, and PyTorch**.
- Designed and implemented complex and scalable ML services deployed from research to production systems using **Infrastructure as Code (IaC),** technologies including **Azure Functions**, **Docker, Kubernetes, and Ansible** to handle hundreds of platforms concurrently.
- Built **enterprise-first, real-time behavioral monitor** for platform avionics to detect deviations from learned norms in observed platform behavior. Developed ETL pipeline in **Azure, Spark, and ElasticSearch** to collect 100's GB/hr to interface with **PyTorch** modeling.
- Executed low TRL-level research in the DNN-powered binary analysis domain. Custom **NLP** tech stack combined with **Pytorch and PostgreSQL** created an entropy-based detector, trained on 600k binary functions to detect malicious binary patterns with 90% F1.
- Enriched enterprise machine-translation capabilities using **LoRA LLM finetuning** to develop **C to Python translator** for secure computing.
- Managed and mentored a team of **8 multi-disciplined engineers** while hosting enterprise-wide monthly workshops to foster collaboration and explore **state-of-the-art ML research** with approximately **300hrs of participation across 30 attendees**.

Autonomy Engineer — *Hazelwood, MO* — **02/2019 - 12/2021**

- Designed and developed AI agents for Aerospace Simulation (AFSIM) for optimal path-planning behaviors such as "search and rejoin" and "wingman-follow" to support a **$1.3 billion**, four year project using **rule-based logic, A*, and finite-state machines in C++.**
- Automated and optimized business logic for the core simulation experiments, including A/B, Auto-Targeting, and Multivariate Testing.
- Implemented MLOps pipeline with IaC principles using Ansible and Terraform for Cloud resources to reduce simulation setup time by 70% and ensure consistent deployment procedures among enterprise infrastructure environments.
- Continuous Integration/Deployment Pipeline Integration, pull requests, code reviews, load/stress testing, unit/integration/e2e testing.

Robotics and AI Researcher — **Saint Louis University** — *St. Louis, MO* — **04/2017 - 04/2018**

- Research grant funded position to lead research projects relevant to NSF Cyber-Human System programs in fields of Robotics and AI.
- Designed and developed systems facilitating the supervised learning of tactile and kinematic features on an anthropomorphic robotic arm using **Tensorflow** LSTM structures and **Pandas** for **Time-Series** data-analysis.
- Built e2e perceptual systems leveraging Xbox Kinect visual system to implement inverse kinematic control solutions for robotic platforms.
- Research and prototyped cutting-edge robotic, medical devices in domain of neuroblastoma ablation: **custom PCB design, C, and ARM**

Autonomy Engineer — **Dynamic Controls** — *Maryland Heights, MO* — **01/2016 - 09/2017**

- Designed and installed Building Automation Systems for a $110M portfolio of new and old constructions. **C++, C, Python Javascript**

Software Engineer, Co-op — **Emerson-White Rodgers** — *Ferguson, MO* — **12/2014 - 09/2015**

- Automated the test apparatuses of legacy products, reducing the manual test time by **80%** and scaling productivity 5x. **Arduino, C, C++**

Education

Masters of Science — **Saint Louis University** — *St. Louis, MO* — **01/2017 - 12/2022**

- Major in Engineering; Emphasis on Robotics and AI

Bachelors of Science — **Southern Illinois University** — *Edwardsville, IL* — **08/2012 - 05/2016**

- Major in Mechanical Engineering, Minor in Mathematics

Projects

- **CyberPatriot:** Implemented Data-Science module in Boeing's challenge to AFA's CyberPatriot youth outreach program **(2024)**
- **GrandM:** Designed and built chess engine to prototype non-traditional, dynamic AI for future game building **(2024)**

Certifications

- Software Engineering and Architecture: **Saint Louis University**
- Data Pipelines and Orchestration with Apache Airflow: **Saint Louis University**
- AWS Academy Solutions Architect Professional Certificate: **Saint Louis University (Expected 2025)**