Jonathan Perkins

Full Stack Software Engineer

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EXPERIENCE

Software Engineer (Full Stack) at *Parsons Corporation* **Jan 2025 – Present**

- Designed and built a full stack web application with OAuth2, JWT-based authentication, and CORS allowing users to configure and monitor CNN and transformer neural network (AI/ML) optimization engine pipelines
- Architected a dashboard using UI/UX design and frontend technologies including TypeScript, React, Vite, Tailwind, Zustand, and TanStack, providing users with real-time metrics sent with Server Sent Events (SSE)
- Led development of scalable REST APIs in Python for user auth, task ordering, and performance metrics shared over 24 HTTP endpoints on a FastAPI ASGI server handling hundreds of concurrent JSON requests
- Refactored internal APIs, reducing time taken to develop and maintain the engine's functionality by over 50%
- Wrote automated test suites in Pytest and Jest, maintained a Docker ecosystem, reduced boilerplate code by 82% using ORM, and built a GitLab CI/CD pipeline, simplifying deployment and increasing team efficiency

Software Developer (Intelligence Analyst II) at *DarkTower (Queen Associates, Inc.)* **Oct 2023 – Jan 2025**

- Developed and configured custom web scraping and threat detection tools in Python, Bash, VBA, JavaScript, and Go according to specific needs of analysts, increasing team's retrieval of sensitive financial data by 35%
- Automated retrieval and analysis of 25+ TB of leaked data across multiple Linux VMs, allowing for resident analysts to retrieve and examine 200 times more data than was initially possible in requested time frames
- Analyzed 3 million leaked files, crafted dozens of SQL queries, created 90+ graphics in Python and Data Studio (Looker), wrote 48 technical reports, and gave semi-weekly presentations to Fortune 500 clients

Python Developer Intern at the *National Science Foundation (NSF)* **May 2023 – Aug 2023**

- Built a data pipeline, trained 45 unsupervised ML models in Python, and tested 31 signal processing filters to obtain parts-based representations of noisy spectroscopic data, improving accuracy of analysis by 28%
- Determined environmental causes of photovoltaic (solar cell) material degradation through data analysis

Machine Learning Researcher at the *University of Alabama at Birmingham* **Aug 2022 – Dec 2024**

- Trained, validated, and benchmarked over 100 variational autoencoder deep neural networks in Pytorch for spectral and image feature detection; created and presented 120 figures in Python detailing model accuracy
- Demonstrated effective methods of removing 100% of cosmic rays and 98% of background noise from dense, hyperspectral HDF5 data, providing researchers with more accurate analysis of energy materials

PROJECTS

Full Stack Website (Blog) **foureyedbutterfly.com**

CRUD application built with JavaScript, React, Vite, Sass CSS, Node.js, Express, Axios, MySQL, credential encryption, and token-based authentication; deployed on an Ubuntu VPS with an Nginx server, load balancing, and SSL certs

Portfolio Website **jayandsparrow.com**

Web application created using Next.js, React, TypeScript, Framer Motion, and Tailwind CSS; deployed on Vercel

SKILLS

- Programming languages: Python, JavaScript, TypeScript, HTML, CSS, MATLAB, SQL, Java, C, C++, Go, Rust
- Technologies: React, Node, Vue, Express, Redux, Material UI, FastAPI, Django, Flask, RESTful APIs, TCP/IP, HTTPS, JSON, XML, WebSockets, CORS, PostgreSQL, MySQL, SQLite, MongoDB, AWS, Google Cloud, CI/CD, DevOps, SDLC, unit testing, Agile, Scrum, Jira, Git, Docker, Kubernetes, Bash, GNU utils, Pytorch, TensorFlow
- Spoken languages: English, Spanish, Portuguese, French; some Italian, Arabic, and Mandarin Chinese

EDUCATION

Bachelor of Science in Computational Physics at the *University of Alabama at Birmingham* **2022 – 2024**

- **3.75 GPA;** minors in Computer and Information Sciences and Mathematics
- Relevant coursework: OOP, algorithms and data structures, applied machine learning, computer vision
- Honors: NASA Alabama Space Grant Consortium scholarship, SPS, honors society, magna cum laude