Ty Misiorek

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Education

University of Virginia Charlottesville, VA

Bachelor of Science, Computer Science; GPA: 3.88/4.00 *Aug. 2022 – May 2026*

- **Coursework**: Data Structures and Algorithms, Computer Architecture, Software Development, Artificial Intelligence, Machine Learning, Reinforcement Learning, Computer Vision, Linear Algebra, Probability

Experience

Software Engineer Intern Jun 2025 – Aug 2025

Parsons Corporation *Aberdeen, MD*

- Developed a domain-agnostic deep reinforcement learning framework for training AI agents, integrating Monte Carlo Tree Search and Residual Neural Networks, with domain logic fully decoupled from training (Pytorch, CUDA)
- Accelerated the AI training pipeline by 15× through batching, multiprocessing, tree-reuse, fast state hashing, and caching, enabling faster experimentation and maximizing GPU utilization
- Built automated GitLab CI/CD pipelines, dockerized deployments for GPU-enabled VMs, and integrated pytest-based unit testing for reproducibility
- Designed a Flask-based REST API with Chart.js for live model inference, interactive loss/Elo curves, and an embedded presentation dashboard summarizing model statistics and architecture

Undergraduate Research Assistant Sept 2023 – Present

UVA School of Data Science *Charlottesville, VA*

- Co-authoring a research paper analyzing university governance, presented at INSNA Sunbelt 2025 (Paris)
- Built a modular ETL pipeline to process archival records (1999-2018) from 700+ universities, generating a 1,000,000+ row dataset and reducing manual review time by 500+ hours
- Automated processing of 20,000+ scanned pages by developing an OpenCV-based layout parser and integrating PyTesseract OCR for text extraction
- Achieved 99%+ data precision by combining the OpenAI API, NLTK tokenization, nameparser, and custom cleaning and validation modules
- Quantified the influence of university board composition on presidential appointments using multivariate logistic regression (statsmodels), ROC-AUC validation (scikit-learn), and network centrality measures (NetworkX)

Projects

Spotnet | *Flask, Three.js, ForceGraph3D, Spotify API* Jun 2025 – Present

- Building an interactive 3D visualization of Spotify's artist collaboration network (100K+ nodes and edges) optimized through LOD instancing, dynamic node rendering, and KDE-based edge bundling
- Implementing an unsupervised recommender combining personalized PageRank with Graph Convolutional Networks

theCourseForum | *Django, HTML/CSS, PostgreSQL, DigitalOcean* Sept 2023 – Present

- Member of UVA's largest course review platform, utilized by 20,000+ students
- Implemented course pagination and deprecated legacy jQuery code, contributing to a team-wide 200% improvement in server response times

ResearchHub | *Django, Bootstrap, AWS S3, Google OAuth* Sept 2024 – Dec 2024

- Led a 5-member agile team as Scrum Master through the design, development, and deployment of a full-stack research project management web app
- Built a Django/PostGreSQL backend for project/role data, AWS S3 file storage, and a GitHub Actions CI/CD pipeline for automated testing and deployment
- Implemented role-based team management, in-app messaging, shared calendars, and project roadmap tracking to improve team coordination

Technical Skills

Languages: Python, Java, C, JavaScript, SQL, R, HTML/CSS, Bash
Frameworks & Libraries: PyTorch, scikit-learn, NetworkX, Pandas, NumPy, OpenCV, Django, Flask
Developer Tools: Git, GitLab CI/CD, GitHub Actions, Docker, Heroku, JupyterLab, AWS S3