TIMOTHY METZGER

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EDUCATION

M.S. Computer Science, Georgia Institute of Technology — 2022 - 2024
Specialization: Interactive Intelligence — GPA: 3.90

B.S. Mechanical Engineering, Saint Louis University — 2019 - 2022
Minor in Engineering Mathematics — GPA: 4.0
Summa Cum Laude

A.S. Engineering Science, Saint Louis Community College — 2014 - 2018
GPA: 3.90

RESEARCH

AI Material Discovery Research Assistant — Jan 2023 - May 2023
Georgia Institute of Technology — *Atlanta, GA*

- Conducted research on the discovery of new materials using AI
- Translated lattice structure information into a computer recognizable structure
- Input electrical potentials for known materials
- Manipulated graph neural networks to find potential materials

PRESENTATIONS & POSTERS

Automated Pill Sorting — May 2022
Saint Louis University — *St. Louis, MO*

- Presented a poster and functioning prototype for pill sorting in pharmacies
- Proposed machine would take a patients pills and sort them into a 7-day bin
- Demonstrated potential for benefits to patient health through prescription adherence

DIY Quadcopter Drone — May 2018
Saint Louis Community College — *St. Louis, MO*

- Presented a poster on developing your own drone using a 3D printer
- Discussed techniques for component design in CAD
- Showed the importance of knowing when to manufacture and when to buy parts

PROFESSIONAL EXPERIENCE

Senior Real-Time Software Engineer — July 2025 - Present
LSEG Data & Analytics — *St. Louis, MO*

- Independently developed real-time data transform and normalization software in C++ for financial data
- Created and maintained thorough documentation on software developed to meet customer demands
- Maintained relationships with customers and colleagues in Europe, Asia, and South America
- Deployed software to the cloud using AWS's EC2, SQS, S3, and ElastiCache
- Utilized generative AI for accelerated code development in partnership with Microsoft
- Conducted code reviews using GitLab integrated with SonarQube to ensure maintainable and secure software

Real-Time Software Engineer - F22 — May 2024 - Present
Boeing — *St. Louis, MO*

- Executed system defect burndown, reducing the total number of defects by 200+ in eight months
- Implemented new capabilities into legacy systems containing 1M+ lines of code in Ada and C++
- Performed system validation and verification through extensive testing procedures using C#
- Ensured new code met quality standards and customer requirements through peer review using BitBucket
- Constructed software design documents detailing the code changes needed to implement software behaviors
- Updated legacy tooling to accommodate new system capabilities and improve developer efficiency
- Managed and coordinated test case issue tracking and resolution across multiple agile teams
- Administered knowledge transfer sessions to improve team efficiency and effectiveness
- Collaborated with teams across 3+ companies to integrate software with avionics hardware
- Created comprehensive documentation to verify complex system behavior using Confluence

Algorithmic Stock Trader Jan 2019 - Present
Personal *Eureka, MO*

- Utilized SciKitLearn and Pytorch to develop machine learning based trading strategies
- Created multiple algorithmic trading strategies combining custom indicators with reinforcement learning

Assistant Manager Jan 2014 - Jan 2017
Schnucks *Eureka, MO*

- Managed employee scheduling and optimized department workflow

SKILLS

Technical Skills	Python, C++, C#, Java, Ada, SQL, Jira, Confluence, Git, MATLAB, MS Office
Libraries	NumPy, SciPy, Pandas, MatPlotLib, PyTorch, VectorCast, Boost, Junit
Soft Skills	Problem Solving, Coordination, Communication, Teamwork, Management
Certifications	Professionally Licensed EIT - MO

PROJECTS

N-Directional A* Search for Atlanta. Implemented a version of N-Directional A* search as a potential solution to the infamous Traveling Salesman Problem. The Algorithm makes use of optimization techniques commonly used for bi-directional pathfinding to provide a solution up to 2x faster than the Held-Karp algorithm.

Andrew File System. Implemented a functional replica of an Andrew File System using C++ and gRPC.

AI Trading System. Currently working on developing an advanced stock trading agent utilizing a combination of proximal policy optimization, hidden Markov models, regression models, and proprietary indicators.

Dyna-Q Stock Trader. Built an AI model for trading stocks using Numpy and Pandas using Q-learning with dyna to 'hallucinate' additional training data.

Raven's Progressive Matrix Agent. Created an agent capable of solving the visual based Raven's intelligence problems with results exceeding that of humans.

SCHOLARLY MEMBERSHIP

ACM - Georgia Tech 2022-Present
Phi Theta Kappa - STLCC 2016-2018

ADDITIONAL ACTIVITIES

Track & Field Coach - USATF Level 1 2019-Present