

# TIMOTHY METZGER

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## EDUCATION

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**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

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

- Conducted research on discovering 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

## TEACHING

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**Teaching Assistant - AI** Tentative - Spring 2025  
Georgia Institute of Technology *Atlanta, GA*

- Provided verbose feedback on student work to facilitate success
- Assisted students in coursework clarifications
- Graded student assignments and exams

## PRESENTATIONS

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**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
- Showed 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

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

- Conducted research and development of future capabilities for the F22 platform, with a focus on sensors

- Implemented real-time data processing algorithms ensuring high reliability
- Collaborated with cross-functional teams to integrate software with avionics hardware
- Performed system validation and verification through extensive testing procedures.
- Developed and executed simulation scenarios to validate software behavior under various flight conditions
- Created comprehensive documentation to verify complex system behavior preventing defects in production

## Algorithmic Stock Trader

Jan 2019 - Present

Personal

*Eureka, MO*

- Developed algorithmic trading strategies utilizing proprietary indicators and machine learning
- Utilized existing machine learning frameworks for rapid development
- Maintained a positive PnL throughout

## Assistant Manager

Jan 2014 - Jan 2017

Schnucks

*Eureka, MO*

- Assisted in employee scheduling
- Collaborated with department leads to optimize workflow
- Maintained tight deadlines for product delivery and sales

## SKILLS

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<b>Technical Skills</b>	Python, C, C++, Java, C#, Rust, SQL, MATLAB, LABVIEW, Autodesk, MS Office
<b>Libraries</b>	PyTorch, Scikit-Learn, NumPy, SciPy, Pandas, Matplotlib, spaCy, Qt, Junit
<b>Soft Skills</b>	Problem Solving, Communication, Teamwork, Management
<b>Certifications</b>	Licensed Engineer in Training - MO

## PROJECTS

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**N-Directional A\* Search.** Implemented an N-directional A\* search algorithm in Python for finding the optimal path between N locations in the greater Atlanta region. Algorithm solves a problem similar to the Traveling Salesman problem, but in a way that can leverage many of the common A\* search optimizations such as landmarks, shortcuts, and ATL

**AI Trading System.** Currently working on developing an advanced stock trading agent utilizing a combination of proximal policy optimization, hidden Markov models, N-BEATS, 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.

**Andrew File System.** Implemented a functional replica of the Andrew File System using C++ with Googles protobuf and gRPC.

**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

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

## ADDITIONAL ACTIVITIES

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Track & Field Coach - USATF Level 1	2019-Present
Professional Triathlete	2016-2020