

# TIMOTHY METZGER

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## EDUCATION

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**M.S. Computer Science**, Georgia Institute of Technology  
Specialization: Interactive Intelligence

Expected May 2024  
GPA: 3.80

**B.S. Mechanical Engineering**, Saint Louis University  
Minor in Engineering Mathematics  
Summa Cum Laude

2019 - 2022  
GPA: 4.0

**A.S. Engineering Science**, Saint Louis Community College

2014 - 2018  
GPA: 3.90

## SKILLS

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

## RESEARCH

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**AI Material Discovery Research Assistant**  
Georgia Tech

Jan 2023 - May 2023  
*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 network to find potential materials

## PRESENTATIONS

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**Automated Pill Sorting Poster**  
Saint Louis University

May 2022  
*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**  
Saint Louis Community College

May 2018  
*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

## 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

**Physics Simulation Engine.** Currently working on developing a Physics Engine for simulating soft-body, rigid-body, and fluid dynamics using Rust and Vulkan

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

**Q-Learning 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.

## PROFESSIONAL EXPERIENCE

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### Stock Trader

Personal

Jan 2019 - Present

*Eureka, MO*

- Traded stocks and cryptocurrencies, primarily those labeled as "blue chip"
- Developed several trading models using a variety of machine learning techniques
- Maintained a profitable PnL throughout

### Assistant Manager

Schnucks

Jan 2014 - Jan 2017

*Eureka, MO*

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