Tiago Mateus Moreira de Almeida

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EDUCATION

Stevens Institute of Technology - Hoboken, New Jersey
Bachelor of Science, Computer Science | GPA: 3.978 Expected May 2028
Coursework: Matrices & Vectors, Multivariate Calculus, Discrete Structures, Data Structures, Algorithms (In Progress), Computer Architecture and Organization (In Progress), Linear Algebra (In Progress), Intermediate Statistics (In Progress)
Honors: Global Scholarship, Upsilon Pi Epsilon Honor Society

The American International School of Muscat - Muscat, Oman Graduated May 2024
Relevant Coursework: AP Computer Science Principles, AP Calculus AB, AP Physics 1 & 2, AP Biology
GPA: 4.0 | 1540 SAT (800 Math, 740 Reading and Writing) | 13 AP Courses (11 scored 5/5)
Honors: Mathematics Student of the Year 2023, Physics Student of the Year 2024, Music Student of the Year 2024, Perfect AP Computer Science Test Score (Top 0.3% of test takers; placed top 300/130,000 test takers)

WORK EXPERIENCE

Explainable and Controllable AI Lab | Hoboken, New Jersey
Research Assistant **2024-Present**

- Engaged in research on explainable AI (XAI), focusing on interpretable machine learning and computational linguistics
- Acquiring core skills in machine learning (ML) and natural language processing (NLP), including model interpretability techniques
- Contributing towards the laboratory's research initiatives and publications via a mechanistic interpretability project under the guidance of Professor Zining Zhu

RESEARCH PROJECTS

Conceptual Hierarchies within Large Language Models | ECAI Lab **2025**

- Used NLTK and Grok-3 to automatically generate a novel WordNet-derived dataset of hierarchical concepts, complete with 892 nouns and knowledge-expressing prompts
- Implemented activation patching, a causal mechanistic interpretability technique, by registering PyTorch forward hooks on layer and value projection modules of Llama-2-7B, Gemma-2-9B, and Mistral-7B-v0.1 via HuggingFace transformers
- Processed the experimental outputs using Pandas, NumPy, and SciPy, finding that concepts are organized hierarchically within LLMs in around 61-75% cases
- Finishing a manuscript for arXiv preprint and submission to ACL Rolling Review

SKILLS

Programming Languages: Python, Java, Scheme
Libraries: PyTorch, HF Transformers, NumPy, SciPy
Research: Adaptability, Critical Thinking, Problem Solving, Communication & Presentation, Data Analysis

EXTRACURRICULARS

Jazz and Concert Ensemble | Hoboken, New Jersey
1st Tenor Saxophone **2024-Present**

- Invited to play and solo with the Stevens Jazz and Concert ensemble