Matthew Thomas Pisano

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Skills and Experience

- **Research (3 Years):** Multiple conference acceptances, academic talk invitations, work in research labs.
- **Teaching (2 Years):** Experience holding lectures, managing curricula, designing assignments, testing/grading.
- **Machine Learning (3 Years):** Transformer models, prompt engineering, RL, NLP, ASR, PyTorch, CUDA.
- **Python Programming (5 Years):** PyTorch, HuggingFace, data analysis, LLM fine-tuning, distributed systems.
- **Software Development (4 Years):** DevOps in a professional, team setting, CI/CD, project leadership and planning.
- **Web Development (5 Years):** React.js, Node.js, responsive design, DB management.
- **Awards and Certifications:** Eagle Scout, SUNY NP outstanding graduate, 1st place globally at Mega-Ace hackathon.

Research and Publications

- **Bergeron: Combating Adversarial Attacks through a Conscience-Based Alignment Framework**. A weak-to-strong generalization framework for alignment. Involves an LLM acting as the "conscience" of a larger, more capable LLM. Accepted at the RPI Graduate Research Symposium. Published to *ProQuest*. ArXiv: 2312.00029
- **Moral High Ground: A Text-Based Games Benchmark for Moral Evaluation**, under *IBM*. A novel benchmark for evaluating the moral reasoning abilities of LLMs through conversational text-based games.
- **PredictChain: Empowering Collaboration and Data Accessibility for AI in an Algorand Blockchain-based Marketplace**. Research article on the development of *PredictChain*, a decentralized machine learning marketplace. 1st place global hackathon winner. Presented at *ChainScience* 2023. ArXiv: 2307.15168
- **On Picard Groups and Jacobians of Directed Graphs**. Linear algebra and combinatorics study of *Chip-Firing games* and how graph edge manipulations affect game state evolution. Accepted into *JMM* 2023. ArXiv: 2302.10327

Work Experience

- **IBM** (*Staff Software Engineer, 2025*), Poughkeepsie, NY. Low-level C/C++ development for compiling PyTorch models onto IBM's *Sypre* AI accelerator chips. Automate build workflows, organize team scrums, and pull-request meetings.
- **SUNY Ulster** (*Computer Science Adjunct, 2025*), Stone Ridge, NY. Instruct *Architecture and Organization* course. Lecture, manage curriculum, grade student work, attend regular faculty meetings, and coordinate with colleagues.
- **FileScience** (*Quality Assurance Lead Engineer, 2020-2025*), Kingston, NY. Develop complex, distributed cloud-to-cloud backup software and ensure code is up to industry standard testing and documentation practices. Coordinate with team members to regularly review algorithms and methodologies.
- **Substrate AI Research** (*Research Engineer, 2024*), Madrid, Spain. Development of a small *Metacontrol* LLM that evaluates whether user queries violate a policy set before being sent to a more generalized assistant. Used *LoRA* fine-tuning and dataset cleaning to generate high-quality results from sparse, synthetically generated data.
- **IBM Research** (*Research Extern, 2023*), Yorktown Heights, NY. Research into LLM alignment using moral principles through fine-tuning on text-based games. Generated a diverse conversational dataset of moral situations and trained LLMs to extract the embedded ethical principals.

Education

- **Rensselaer Polytechnic Institute** (*2023-2024*), Troy, NY. *Master of Science* in Computer Science, published thesis on artificial intelligence alignment. 4.0 GPA, awarded TA position and scholarship. Classes in Cognitive Science, Informatics, Learning Theory, Information Retrieval, Low-Level Parallel Computing, and Program Analysis.
- **SUNY New Paltz** (*2021-2022*), New Paltz, NY. *Bachelor of Science* in Computer Science (Minor in Applied Mathematics), undergraduate research. 4.0 GPA, *Outstanding Graduate honor*, and published undergraduate research.