

Daniel Crawford, MS, MEng, MA
Pittsburgh, PA

Education, Course Highlights, Selected Research Papers/Projects

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|-------------|-------------------------|--|---------------------------------|
| MA | Linguistics | University of Pittsburgh | August 2023 – April 2024 |
| LING | Independent Research | <i>Geographic Language Distribution Model</i> | |
| LING | Discourse Analysis | <i>Regularity of Narrative Allows for Irregularity of Orientation</i> | |
| LING | Graduate Morphology | <i>Lexical Access Prediction from Semantic Embedding</i> | |
| LING | Graduate Syntax | <i>Syntactic. Binding Theory in Japanese and Persian Farsi</i> | |
| LING | DS for Research | <i>Corpus Study of Future Tense Construction Preference of L2 English Learners</i> | |
| MS | Computer Science | Georgia Institute of Technology | August 2021 – April 2023 |
| CS | Deep Learning | <i>Deep Learning for Automated Satellite Orientation</i> | |
| CS | Cognitive Science | <i>Modeling Social Media Influence on Lexical Processes</i> | |
| CS | ML for Trading | <i>Multi-Indicator Computational Trading Portfolio Management</i> | |
| CS | Computing for Good | <i>Secure, Personalized Eyeglass Matching System for Impoverished Community</i> | |
| IYSE | Simulation | <i>Hospital Throughput Optimization Simulation Case Study</i> | |
| MEng | Industrial Eng. | New Mexico State University | August 2020 – April 2022 |
| IE | Discrete Optimization | <i>Discrete Optimization Approach to Airline Flight and Captain Scheduling</i> | |
| BS | Mathematics | University of Pittsburgh | August 2016 – April 2020 |
| UHC | BPhil Program | <i>Language family analysis and geocomputation (Undergraduate Thesis)</i> | |
| MATH | BIG Problems | <i>Numerical Ratings from Semantic Analysis of Baseball Scouting Reports</i> | |

Awards & Recognitions

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|-----------------------------------|---|----------------------------|
| Graduate Expo Conference | University of Pittsburgh, DSAS | Research Presentation |
| Grad AI Networking Intern. | University of Pittsburgh, Dean of Grad Studies | \$1200 |
| Bachelor of Philosophy | University of Pittsburgh, Honors College | BPhil Joint Conferral |
| SMART Scholarship | DOD - Scholarship-for-Service Program | \$107,000 + 2yr Internship |
| Brackenridge Fellowship | University of Pittsburgh Honors College | \$800 |
| Merit Scholarship | University of Pittsburgh (College of Engineering) | \$2,000/semester |

Professional Experience

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| Dunedain Systems | September 2025 – Present |
| Founding Machine Learning Engineer – Austin, TX [Remote in Pittsburgh, PA] (Full Time Employee) | |
| <ul style="list-style-type: none">Devised and implemented an ontological AI backend integrating graph-structured NER, temporal-spatial reasoning, and multi-stage planning extraction, improving automated mission understanding accuracy and reducing planning artifact construction time by 4000%.Built a deep U-Net–based geospatial detection model to identify undocumented mobility corridors, achieving high-recall performance in unstructured terrain where no labeled data previously existed, optimized to process zoom 13 level within 15sDeveloped multimodal geospatial visualization software to overlay traversability, hydrology, and urban features onto satellite imagery, improving processing speed by 4xCo-architected an LLM/NLP agentic ecosystem applying clean software-engineering principles to experimental ML systems, reducing prototype iteration time by 35% and supporting research into cognitively grounded agent behavior | |

Eccalon, LLC**March 2025 – September 2025****Machine Learning Engineer** – Hendron, VA [Remote in Pittsburgh, PA] (Full Time Employee)

- Led end-to-end development and deployment of **deep reinforcement learning** models for autonomous underwater vehicles (AUVs), including designing and building a **custom simulation environment** to validate agent performance in realistic scenarios
- Co-developed a vendor **contract analysis system using LLMs** + custom APIs, automating multi-document comparison and extraction, **cutting human review time by 70%**.
- Designed and deployed an **OCR-to-structured-data pipeline integrating vision models** and text extraction, boosting downstream **entity-matching precision by 30%**.
- Built a **RAG-based risk-identification engine** that links foreign company ownership through graph-like entity structures, improving investigative recall for high-risk entities by 45%.
- Engaged in **culture leadership** through code review, emphasis on clean SOLID codes and documentation

Elfur, Inc.**April 2024 – November 2024****Founding NLP/LLM Engineer** – New York, NY [Remote in Pittsburgh, PA] (Part Time Employee)

- Architected and led development of a **resume-understanding NLP system**, combining summarization, entity extraction, and semantic matching to increase **automation accuracy by 55%** as founding engineer, for **company that became non-profit**
- Designed **end-to-end ML/LLM pipelines** using MongoDB, OpenAI, Hugging Face, and LLaMA APIs, reducing **experiment time by 300%** and establishing the foundation for the company's core product
- Built **data-engineering pipelines for large-scale text corpora**, improving data consistency and **accelerating model-training cycles by 4x**
- Applied **cognitive-linguistic insights to model design**, improving semantic clustering performance on human-interpretable categories relevant to hiring workflows.

Optimal Dynamics**August 2022 – December 2023****AI Engineer/Data Analyst** – New York, NY [Remote in Pittsburgh, PA] (Full Time Employee)

- Implemented automated **machine learning workflows and deployments**, reducing **time-to-delivery** of analytics by 85%.
- Collaborated with engineering teams to optimize a cutting-edge **Deep Reinforcement Learning Supply Chain model**, **driving \$10M+ in client profit gains**.
- Led 5-member customer-facing solutions engineering and **machine learning engineering initiatives**, ensuring alignment with client goals and accelerating solution delivery

Dept. of the Army, The Research and Analysis Center (TRAC)**July 2020 – April 2022****Data Scientist, Operations Researcher/Systems Analyst** – Ft. Lee, VA (Full Time Employee, Civilian)

- Led research for **metric development and discrete-event simulation software**, enabling senior leadership to evaluate **operational effectiveness under varied conditions**
- Created an **automated analytics library in R** to support sustainment modeling, reducing recurring analysis **time by +70% across the division**
- Designed and deployed R Shiny dashboards for complex data exploration, increasing analyst throughput and **reducing manual reporting effort by 60%**
- Built an NLP-based technical literature search engine with summarization capabilities, accelerating research **synthesis workflows for military analysts by 3x**
- Developed a **Java analytics dashboard for General Officers**, improving budget prediction accuracy and enabling more informed resource allocation.
- Mentored junior data scientists, **strengthening team research methods** and improving model reproducibility standards.