LUIS EDMUNDO BRENA PANTOJA

Phone: (+1) 667-378-1725, Email: luisedmundo354@gmail.com
Portfolio, GitHub, LinkedIn

EDUCATION

Johns Hopkins University *August 2023 - May 2025*
M.S. in Engineering Management
GPA: 3.47/4.0

University of Lima *April 2013 – January 2018*
B.E. in Industrial Engineering
GPA: 4.0/4.0

ESAN Graduate School of Business *May 2017 – September 2017*
Diplomado in Corporate Law (6-month, non-degree graduate program; part of LL.M. curriculum)

PROJECTS AND RESEARCH EXPERIENCE

Administrative Appeals Office Dataset for Legal Decision Prediction Oct 2025 - Present
Supervisors: Dr. Benjamin Van Durme, Dr. Andrew Blair-Stanek, JHU

- Proposed a dataset composed of 5 thousand Administrative Appeals Office non-precedent cases including list of rules, facts, analysis, orders (decisions), and Prolog logic for inference.
- Successfully tested zero-shot, few-shot, and fine-tuned models for inference using both human-written and LLM-generated Prolog logic of the cases. Developed a human-in-the-loop framework to identify implicit facts and rules through burden of proof and undefined procedural logic.

Chain-of-Syllogisms: A new approach to legal case annotation [1] Mar 2025 - Present
Supervisors: Dr. Benjamin Van Durme, Dr. Andrew Blair-Stanek, JHU

- Built a dataset of 40 US corporate reorganization cases using a relation-labeled argumentation scheme based on a polysyllogistic structure to test classification, retrieval, and argument generation.
- Conducted dense passage retrieval tests using embeddings SFT, and reranking for argument completion. Evaluated the annotations on multilabel classification, leading to significant improvement in results over existing schemes.

NMBR 9 Game and a Safety Actor-critic Approach to Solve it Sep 2024 - Dec 2024
Supervisors: Dr. Enrique Mallada, JHU

- Developed game logic and user interface using Pygame (to get expert samples). Implemented a fine-tuned actor-critic algorithm with safety constraints. Results demonstrated that the algorithm can learn the rules and generate improvements by effectively modeling the reward (we also tested non-safety actor-critic algorithms and Monte Carlo Tree Search). The manuscript can be found at: NMBR 9 manuscript

SAuL: End-to-End Retrieval Augmented Patent Argumentation Sep 2024 - Dec 2024
Supervisors: Dr. Benjamin Van Durme, JHU

- Tested retrieval and argument generation using lexical sparse retrieval with BM25 and a RAG pipeline. Created a dataset of 3,766 parsed patents indexed by claim and type. The manuscript can be found at: SAuL manuscript

Multimodal Classification for Intent Detection Sep 2024 - Dec 2024
Supervisors: Dr. Andreas Andreou, JHU

· Ported drivers and logic from the X-CUBE-MEMSMIC1 expansion pack to the NUCLEO-L476RG platform, adapted a multimodal classification algorithm to utilize the board's output, and presented the project during the JHU Engineering Design Day. The project repository can be found at: Repository. The manuscript can be found at: Multimodal Classification manuscript

Mentat: Edge device for audio capture and report generation Sep 2024 - Dec 2024
Supervisors: Dr. Sathappan Ramesh, JHU

· Developed NLP components and data/annotation workflows. Used Tkinter for the interface and NVIDIA Jetson Orin Nano as the platform, deploying Phi-3.5 and Whisper locally for transcription, correction, and report generation. Participated in the Spring 2025 Spark Accelerator, receiving a monetary prize. Repository: Mentat repository.

PUBLICATIONS

[1] L. Brena, W. Jurayj, G. Deyesu, Z. Al-Huneidi, A. Blair-Stanek, and B. Van Durme, "Chain-of-syllogisms: Unifying analysis & conclusions boosts argument mining," in *Proceedings of the 25th International Workshop on Computational Models of Natural Argument (CMNA'25)*, CMNA'25, December 12, 2025, Online, Dec. 2025.

Full list of publications

PROFESSIONAL EXPERIENCE

Graduate Research Assistant Apr 2025 - Present
Johns Hopkins Data Science and AI Institute

· Developed AAO non-precedent and U.S. corporate reorganization datasets with structured labels (rules, facts, analysis, orders) for legal decision prediction and argument mining.
· Parsed cases to Prolog and evaluate zero-/few-shot and supervised LLM setups for statutory reasoning, argument completion, and polysyllogistic argument annotation (Chain-of-Syllogisms).

Event Technology & Operations Manager Jul 2024 - May 2025
Peabody Institute

· Coordinated technology and logistics for 30+ large academic, musical, and corporate events, managing staff, timelines, and venue resources.
· Applied process-improvement methods to inventory and scheduling, reducing required labor and reliance on temporary staff.

Engineering Intern Sep 2023 - Dec 2023
Intralox

· Prototyped an AI-assisted ideation pipeline that converts market briefs into product concepts and visual mockups using natural language and image models.
· Integrated client and stakeholder feedback loops to prioritize and refine high-impact product concepts.

Senior Manager, Operations & Digital Transformation Aug 2018 - Aug 2023
CHC Hotels

· Led a 24-person cross-functional team to implement dynamic pricing, automation, and digital systems, improving revenue metrics and guest satisfaction.
· Managed seven-figure renovation and technology budgets (PMS/POS, inventory systems), achieving sustained cost reductions and multi-year profit growth.

Founder & Product Lead Oct 2018 - Aug 2023
Grupo Oka (Retail)

· Founded and scaled a specialty food retail concept from one outlet to three stores, overseeing product strategy, branding, and operations.

Software Engineer Dec 2017 - Aug 2018
Relif Store

· Developed a Rails-based platform for retail and inventory management, improving order processing and stock tracking workflows.
· Collaborated with non-technical stakeholders to translate operational requirements into maintainable software features.

SKILLS/INTERESTS

Programming Languages	Python, C/C++, MATLAB, HTML/CSS, JavaScript (React)
Machine Learning Tools	Pytorch, Tensorflow, Sklearn, Pandas, Numpy, HF Transformers
Interests	Photography, Basketball, and Badminton