Alejandro Espino

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Education

University of Illinois at Urbana-Champaign — Urbana-Champaign, IL
Bachelor's in Engineering Physics (Cumulative GPA: 3.8) — *Aug. 2022 – May 2024*
- Minors in Computer Science and Mathematics

William Rainey Harper College — Palatine, IL
Associate's Degree in Engineering Science (Cumulative GPA: 3.91) — *Aug. 2020 – May 2022*

Experience

Undergraduate Research Assistant — June 2022 – August 2023
University of Illinois at Urbana Champaign Department of Nuclear Physics — *Urbana-Champaign, IL*
- Implemented a refined sampling procedure aimed at producing a highly precise model of lead nuclei, contributing to the improvement of accuracy in simulations.
- Collaborated in the development and execution of a finite difference method, instrumental in approximating derivatives of key variables within a complex hydrodynamics simulation code.
- Produced intricate graphical representations that unveiled the underlying smoothness characteristics of a critical function.
- Recipient of the Jeremiah D. Sullivan Undergraduate Research Award

Projects

Tweet Sentiment Classification with BERT | *Python, PyTorch* — May 2024 - Present
- Conducted further pre-training and fine-tuning on BERT using state of the art strategies detailed in https://arxiv.org/abs/1905.05583.
- Cleaned tweets to optimize tokenization procedure.
- Achieved an F1 score of 0.87 on test set.

A* Search | *Python* — September 2023
- Designed and implemented an A* Search algorithm to solve a diverse range of search problems, including the EightPuzzle and WordLadder challenges
- Developed a flexible framework by creating an AbstractState class, ensuring the algorithm's adaptability for various search problems given proper adjustments to the state class

Relevant Coursework

Computer Science: Machine Learning, Data Structures, Databases, Artificial Intelligence, Probability and Statistics
Physics: Computational Physics, Classical Mechanics, Electromagnetic Fields, Quantum Physics, Special Relativity
Mathematics: Multivariable Calculus, Ordinary and Partial Differential Equations, Differential Geometry, Linear Algebra, Complex Analysis

Skills

Programming Languages: Python, C++, MySQL, MongoDB, Neo4j
Libraries: PyTorch, HuggingFace, sklearn, Pandas, NumPy, Matplotlib, sciPy, Flask, sqlAlchemy
Languages: Spanish (proficient)

Extracurricular

Harper Society of Engineers — September 2020 - May 2022
President

Harper Regenerate — May 2021 - May 2022
President

NASA's L'SPACE Academy — May 2021 - December 2021
Mission Concept Academy and NASA's Proposal Writing and Evaluation Experience

NASA Community College Aerospace Scholars — January 2021 - February 2021