

NICO A. ESPINOSA DICE

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EDUCATION

Harvey Mudd College, Claremont, CA (Major GPA: 3.90)

Expected May 2022

B.S., Mathematics and Computer Science; Humanities Concentration in Philosophy

RELEVANT COURSEWORK

Fall 2020: Artificial Intelligence, Algorithms, Mathematical Analysis, Number Theory and Cryptography

Completed: Mathematics of Big Data, Data Structures and Program Development, Computability and Logic, Linear Algebra, Differential Equations, Abstract Algebra, Multivariable Calculus, Financial Markets and Modeling

SKILLS

Programming Languages: Python, C++, Java, C#, Julia

Models: Neural Networks (RNN, CNN), Bayesian Networks, Support Vector Machines, Random Forest, Naive Bayes

Software: TensorFlow, Keras, Scikit-learn, Pandas, NumPy, CherryPy, PyTorch

RESEARCH EXPERIENCE

[AMISTAD Lab](#), Harvey Mudd College – *Machine Learning Researcher, Team Lead*

May 2020 - Present

- Developed a probabilistic model of abductive logical reasoning using a Bayesian network framework that constructs novel explanations of observed effects for use in machine learning applications; research paper submitted for publication to International Conference on Agents and Artificial Intelligence (ICAART).
- Implementing runtime tests in Python to empirically measure model's superior performance over existing methods; additional paper to be submitted to Pacific-Asia Conference on Knowledge Discovery, Data Mining (PAKDD).
- Currently deriving theoretical bounds on inductive orientation vector, a geometric representation of bias, to prove bounds relating learning success and generalization error.

TECHNICAL EXPERIENCE

Viasat, Inc. – *Software Engineer Intern*

May 2019 - August 2019

Intern Project: Built and delivered a heads-up display on Microsoft HoloLens that improves soldier situational awareness.

- Built REST API using CherryPy Python Library to enable communication between HoloLens and Link 16 radio network.
- Developed a global runtime manager in C# to handle distribution of data into assets, allowing for live updating of heads-up display that improves situational awareness of soldiers.
- Presented by Viasat at the Association of the United States Army Conference (AUSA) in October, 2019.

General Assembly: Data Science Course – *Student*

June 2017 - August 2017

- Built a random forest regression model using Scikit-Learn library in Python to predict the final sale prices of Iowa houses with 90% accuracy and presented model for final project of General Assembly's Data Science course.

PROJECTS

Automated Trading System—*Personal Project*

January 2019 - August 2019

- Built a recurrent neural network with long short-term memory architecture using TensorFlow library in Python to predict changes in stock price based upon market history.
- Automated trading of stock using Alpaca API, Bash scripting, and the neural network's predictions to create an automated trading system.

LEADERSHIP EXPERIENCE

Honor Board, Harvey Mudd College—*Judiciary Board Chair (2020)*

October 2018 - Present

- Oversee 22 students on Harvey Mudd College's Honor Board, responsible for upholding the Honor Code.
- Chair hearings regarding Honor Code violations and mediate settlements between students and faculty.

Society of Latinx in STEM, Harvey Mudd College—*Public Outreach Director*

September 2018 - Present

- Lead biweekly STEM tutoring sessions for 25 high school students and 5 tutors through Uncommon Good and in partnership with Harvey Mudd's Society of Latinx in STEM.

AWARDS AND ACHIEVEMENTS

Harvey S. Mudd Merit Award, Harvey Mudd College, 2018 - 2020

Awarded \$10,000 yearly scholarship for "superior academic achievement and ability to contribute to the College."