# 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 1, Data Structures and Program Development, Computability and Logic, Abstract Algebra 1, Differential Equations / Linear Algebra 2, 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.
- Coordinated weekly team meetings to report research findings to lab director to ensure project's progress.
- Submitted paper for publication to International Conference on Agents and Artificial Intelligence (ICAART).
- Implementing runtime tests to empirically measure model's superior performance over existing methods; additional paper to be submitted to Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD).

## 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.
- Completed project that was presented by Viasat at the Association of the United States Army Conference in October, 2019.

**General Assembly: Data Science Course** – *Student* June 2017 - August 2017

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

## PROJECTS

**Biometric Authentication of Smartphone Users**—*Final Project, Math189R* February 2020 - May 2020

- Built a support vector machine model to authenticate smartphone users with 85% accuracy using biometric data.
- Empirically examined the performance of varying kernel functions, including polynomial, sigmoid and radial basis function.

## 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."*