

Nicolas Espinosa Dice

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Education

Cornell University

Ph.D., Computer Science

Ithaca, New York

Entering September 2022

Harvey Mudd College

B.S., Mathematics and Computer Science, Major GPA: 3.91

Claremont, California

May 2022

Courses: Geometry of Big Data, Artificial Intelligence, Neural Networks, Mathematics of Big Data, Algorithms, Natural Language Processing, Mathematical Analysis, Abstract Algebra, Algebraic Geometry

Research Experience

Department of Mathematics, Harvey Mudd College

Geometric Deep Learning

Advisor: Weiqing Gu

Claremont, California

September 2021–Present

- Built a temporal graph convolutional network (T-GCN) model to detect seizures in electroencephalogram (EEG) data.
- Working to integrate EEG and gait data with geometric deep learning methods to diagnose Parkinson's disease and analyze its progression.

AMISTAD Lab, Harvey Mudd College

Statistical Learning

Advisor: George Montanez

Claremont, California

October 2020–December 2021

- Derived generalization error bounds of learning algorithms in terms of algorithm capacity by introducing a novel geometric representation of algorithm bias.
- Second author of paper published at the *International Joint Conference on Neural Networks (IJCNN 2022)*.

AMISTAD Lab, Harvey Mudd College

Graphical Models

Advisor: George Montanez

Claremont, California

May 2020–October 2020

- Developed a probabilistic model of abductive reasoning using a Bayesian network that unifies selective and creative abduction and constructs common-cause explanations of observations.
- First author of paper published at *13th International Conference on Agents and Artificial Intelligence (ICAART 2021)*.

Industry Experience

Dasion

Machine Learning Engineer

Los Angeles, California

May 2022–Present

- Incoming machine learning engineer at Dasion.

Clinic Program, Harvey Mudd College

Project Manager

Claremont, California

September 2021–May 2022

- Built an unsupervised anomaly detection model on time-series marketing data through a dynamic regression model, a long short-term memory (LSTM) autoencoder, and a random forest regressor.

Etsy

Software Engineer Intern

Brooklyn, New York

May 2021–August 2021

- Developed a transformer-based deep learning model with DistilBERT architecture using Tensorflow to identify safe search queries with over 91% accuracy.
- Improved query understanding at Etsy by retraining an existing transformer-based model that classifies search queries as broad or direct, increasing accuracy by 9% and reducing model volatility.

Viasat

Software Engineer Intern

Carlsbad, California

May 2019–August 2019

- Built REST API using CherryPy Python Library and a global runtime manager in C# to enable communication between Microsoft HoloLens and Link 16 radio network, allowing for live updating of heads-up display.
- Presented by Viasat at *The Association of the United States Army Conference (AUSA 2019)*.

Publications

- [1] [Pre-Print] Ramya Ramalingam, **Nicolas Espinosa Dice**, Megan Kaye, and George Montañez. Bounding generalization error through bias and capacity. In *International Joint Conference on Neural Networks*, 2022.
- [2] **Nicolas Espinosa Dice**, Megan Kaye, Hana Ahmed, and George Montañez. A probabilistic theory of abductive reasoning. In *Proceedings of the 13th International Conference on Agents and Artificial Intelligence*, volume 2, 2021.

Teaching and Leadership Experience

Honor Board

Chair (2020-2021)

Claremont, California

October 2018–May 2022

- Oversaw 22 students on Harvey Mudd College's Honor Board, chaired hearings regarding Honor Code violations, and mediated settlements between students and faculty.

Society of Professional Latinx in STEM

Public Outreach Director (2019-2020)

Claremont, California

September 2018–May 2022

- Led biweekly STEM tutoring sessions for high school students through Harvey Mudd College's Society of Professional Latinx in STEM and in partnership with Uncommon Good.

Artificial Intelligence Course Assistant

Grader and Tutor

Claremont, California

January 2021–May 2021

Scholarships and Awards

Hopper-Dean / Bowers CIS Dean's Fellowship

Cornell University

Ithaca, New York

2022

Graduated with High Distinction

Harvey Mudd College

Claremont, California

2022

Departmental Honors in Mathematics and Computer Science

Harvey Mudd College

Claremont, California

2022

Harvey S. Mudd Merit Award

Harvey Mudd College

Claremont, California

2018–2022

- \$10,000/year scholarship for "superior academic achievement and ability to contribute to the College."

Skills

Languages: English (Native Speaker), Spanish (Fluent)

Programming Languages: Python, C++, Java, SQL, R, Scala, C#

Programming Libraries: TensorFlow, PyTorch, Keras, Scikit-learn