Nicolas Espinosa Dice

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 nico-espinosadice

Education

Cornell University   **Ithaca, New York**
Ph.D., Computer Science   *Entering August 2022*

Harvey Mudd College   **Claremont, California**
B.S., Mathematics and Computer Science, Major GPA: 3.91   *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   **Claremont, California**
Geometric Deep Learning   *September 2021–December 2021*
Advisor: Weiqing Gu

○ Built a temporal graph convolutional network (T-GCN) model to detect seizures in electroencephalogram (EEG) data.

AMISTAD Lab, Harvey Mudd College   **Claremont, California**
Statistical Learning   *October 2020–December 2021*
Advisor: George Montanez

○ 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   **Claremont, California**
Graphical Models   *May 2020–October 2020*
Advisor: George Montanez

○ 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   **Los Angeles, California**
Machine Learning Engineer   *May 2022–Present*

○ Incoming machine learning engineer at Dasion.

Clinic Program, Harvey Mudd College   **Claremont, California**
Project Manager   *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   **Brooklyn, New York**
Software Engineer Intern   *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   **Carlsbad, California**
Software Engineer Intern   *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 Montanez. 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   **Claremont, California**
Chair (2020-2021)   *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   **Claremont, California**
Public Outreach Director (2019-2020)   *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   **Claremont, California**
Grader and Tutor   *January 2021–May 2021*

Scholarships and Awards

Hopper-Dean / Bowers CIS Dean's Fellowship   **Ithaca, New York**
Cornell University   *2022*

Departmental Honors   **Claremont, California**
Harvey Mudd College   *2022*
- Graduated with High Distinction and Departmental Honors in Mathematics and Computer Science.

Harvey S. Mudd Merit Award   **Claremont, California**
Harvey Mudd College   *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