

Diego A. Raygoza-Castanos

<https://github.com/Dieg0Alejandr0>

diegoalejandroraygoza@gmail.com

Education

Massachusetts Institute of Technology

Sept. 2018 – May 2022

Bachelor of Science in Electrical Engineering and Computer Science, Mathematics

Cambridge, MA, USA

Minor in Statistics and Data Science, Philosophy

GPA: 4.8/5.0

Research Experience

Molecular Generation via Keypoints

Nov. 2021 – June 2022

MIT CSAIL, Jaakkola Lab

Cambridge, MA, USA

- Investigated EquiBind created keypoints and binding regions in PDBBind and SBDD-3D datasets.
- Supervised by Xiang Fu, Tommi Jaakkola.

Smoothness in Scene Understanding

Oct. 2020 – June 2021

MIT CSAIL, Torralba Lab

Cambridge, MA, USA

- Created a 2D image dataset from 3D scene renderings for scene understanding.
- Studied latent space smoothness learned by StyleGAN and ProgressiveGAN algorithms.
- Supervised by Jonas Wulff, Antonio Torralba.

Minimum Energy Paths

Feb. 2019 – Aug. 2020

MIT DMSE, Bombarelli Lab

Cambridge, MA, USA

- Proposed new method of finding minimum energy paths based on differentiable ODE solvers.
- Verified a performance superior to traditional NEB method for finding desired paths in certain landscapes.
- Supervised by Wujie Wang, Rafael Gomez-Bombarelli.

Foil Simulations for Vortex Dynamics

Sept. 2019 – Dec. 2019

MIT MechE, van Rees Lab

Cambridge, MA, USA

- Investigated the drag reduction of flapping fins in simulations of numerical solutions to the Navier-Stokes equations.
- Supervised by David Fernandez-Gutierrez, Wim van Rees.

Industry Experience

Microsoft Corporation

Aug. 2022 – Present

Software Engineer

Redmond, WA, USA

- Investigated token-efficient metaprompts which produce quality, varied prompts via LLMs.

Machine Learning Software Engineer Intern, Forecasting

June 2021 – Aug. 2021

Palo Alto Networks, Inc.

Santa Clara, CA, USA

- Investigated the fidelity of TimeGAN-generated time-series data

Other Research Projects

Metropolis-Hastings Algorithm for Multiple Ciphers

April 2022

Massachusetts Institute of Technology

Cambridge, MA, USA

- Created Metropolis-Hastings based algorithm to decode text with multiple ciphers.
- Verified performance was superior to half of the submitted algorithms in both runtime and correctness.
- Final project for ‘Information and Inference’ graduate course.

Robustness of Random Forests on Multimodal ADNI Data

Oct. 2021 – Dec. 2021

Massachusetts Institute of Technology

Cambridge, MA, USA

- Tested the robustness of random forest (RF) classifiers on different modalities of the ADNI dataset.
- Verified how adversarial training improved the robustness of RF classifier across modalities.
- Final project for ‘Machine Learning’ graduate course.

Language Bias in Fake News Detection

Oct. 2021 – Dec. 2021

Massachusetts Institute of Technology

Cambridge, MA, USA

- Empirically measured the bias of LSTM and Transformer-based models towards English in comparison to Japanese and Kurdish in fake news classification.
- Recorded and studied the tokens most responsible for the classification of fake news with gradient-based saliency methods.
- Final project for ‘Natural Language Processing’ course.

Clustering and Forecasting U.S. COVID-19 Trends

Mar. 2021 – June 2021

Massachusetts Institute of Technology

Cambridge, MA, USA

- Investigated whether time-series based clustering methods given 2020-2021 COVID-19 infection data could reasonably cluster U.S. states based on trends.
- Analyzed the effectiveness of ARIMA models to accurately forecast COVID-19 case trends.
- Final project for ‘Statistics, Computation, and Applications’ course.