Diego A. Raygoza-Castanos

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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

Research Experience

Molecular Generation via Keypoints Nov. 2021 – June 2022
MIT CSAIL, Jaakkola Lab *Cambridge, MA, USA*
- Verified that keypoint creation used in EquiBind finds binding regions in PDBBind and SBDD-3D datasets.
- Supervised by Xiang Fu, Tommi Jakkola.

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 tasks.
- Identified 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.
- Proposed method outperformed traditional NEB method for finding minimum paths.
- 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*

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 for anomaly detection

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.
- Algorithm outperformed 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.
- Recognized types of 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 reasonbly 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.