Ignacio Hounie

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Education

- **University of Pennsylvania** — Philadelphia, PA
  PhD Electrical and Systems Engineering. GPA: 4.0 — *2021 - Present*

- **UdelaR - Facultad de Ingeniería** — Montevideo, Uruguay
  Bsc. Electrical Engineering, Signal Processing. — *2015 - 2021*

Experience

- **Montevideo Labs.** — Montevideo, Uruguay.
  Data Engineer for Globalization Partners. — *2021*
  - **ETL pipelines**: Developed and deployed ETL pipelines using AWS.
  - **Service integration**: Lead the data integration of a forecasting and planning service with an applicant tracking service.
  - **Business intelligence.**: Assisted the B.I. department on data extraction and analysis.

- **UdelaR - Institute of Electrical Engineering.** — Montevideo, Uruguay.
  Research and Teaching Assistant at the Signal Processing Department. — *2019 - 2021*
  - **Environmental sound monitoring**: Developed machine listening algorithms for urban sound monitoring in collaboration with Montevideo city council.
  - **Time series anomaly detection**: Developed time series modeling and unsupervised anomaly detection algorithms for a telecommunications service provider. Implemented a data annotation pipeline using Grafana and influxDB.
  - **Image and video restoration**: Implemented inpainting and automatic image registration algorithms for film restoration on university archives.
  - **Teaching**: Machine Learning undergraduate course and hands-on electrical engineering introductory course.
  - **Data Science Interdisciplinary Center**: Participated in *Genomics and Evolution* group.

Publications

- **Automatic Data Augmentation via Invariance-Constrained Learning (2022)**: Hounie, I., Chamon, Luiz F. O., Ribeiro, A., Arxiv preprint.
- **Image Inpainting using Patch Consensus and DCT Priors (2021)**: Ramírez, I., Hounie, I., Image Processing On Line Journal.
- **DCASE-models: A Python library for computational environmental sound analysis using deep-learning models (2020)**: Zinemanas, P., Hounie, I., Cancela, P., Font, F., Rocamora, M., Serra, X., 5th Workshop on Detection and Classification of Acoustic Scenes and Events.
- **PACO and PACO-DCT: Patch consensus and its application to inpainting (2020)**: Ramírez, I., Hounie, I., International Conference on Acoustics, Speech and Signal Processing (ICASSP).

Presentations

- **Graph convolutional neural networks for genome enabled prediction of complex traits (2021)**: Hounie, I., Elenter, J., Etchebarne, G., Poster accepted at: CSHL Probabilistic Modeling In Genomics.
- **On two dimensional mappings of SNP marker data and CNNs: overcoming the limitations of existing methods using Fermat distance (2021)**: Elenter, J., Etchebarne, G.,Hounie, I., CSHL Probabilistic Modeling In Genomics.
- **Machine Learning methods for genome enabled prediction of complex traits in agriculture: benchmarking and robustness to marker elimination (2021)**: Etchebarne, G., Hounie, I.,Elenter, J. CSHL Probabilistic Modeling In Genomics.
- **On Machine Learning Methods for Genome Enabled Prediction of Complex Phenotypes (2020)**: Elenter, J., Etchebarne, G., Hounie, I., Presented at: IEEE ArgenCON.

Projects

- **DNAi**: Undergraduate capstone project. Genome enabled complex phenotype prediction using Machine Learning techniques. Advisors: María Inés Fariello, Federico Lecumberry
- **NASA Space Apps Challenge 2019 Global Finalist**: Improving the performance of machine learning and predictive models by filling in gaps in the datasets prior to model training through crowdsourcing, using dimensionality reduction, visual representations and reinforcement learning.
- **Dynamics of quantum correlations in two-qubit open systems**: Undergraduate research project, proposal elected and funded by CSIC student research program.
- **Lapassion 2019**: Selected to participate in the Latin America Soft Skills and Innovation program. Worked on K-12 foreign language learning games.
- **Ingeniotón Challenge**: Developed electronics and control for an electric stander for disabled children.

Skills

- **Languages**: Spanish (native), English (Fluent), Portuguese (Fluent)
- **Progamming languages**: Python (preferred), C, C++, R , Matlab
- **Technologies and Frameworks**: PyTorch, Tensorflow and Keras, Docker, Linux, RaspberryPi, Arduino.