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Nicolás Fierro

Portfolio: nfierroflo.github.io
github.com/nfierroflo
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As a current student pursuing a Master's in Engineering Sciences with a focus on Electrical Engineering at the University of Chile, my research delves into Robotics and Artificial Intelligence (AI), specifically honing in on Multiple Extended Object Tracking (MEOT) based on Stereo Images. Eager to elevate my expertise, I aspire to pursue a Ph.D. program, with a keen interest in applied Robotics and AI.

Technical Skills

Python	Advanced programming and knowledge of libraries for data mining, machine learning, and signal processing such as: Tensorflow, scikit-learn, Pandas, Pytorch, PyTorch Lightning, scipy, openCV, etc.
Other Languages	C++, JavaScript, Java, Matlab.
Frameworks	ROS, AndroidStudio, QTcreator.
Others	Git (Advanced, Gitflow workflow), Docker (Advanced), Anaconda (Advanced), SQL (basic).
Languages	Spanish (Native), French (C2 TFI certification), English (C1 IELTS certification).

Publications

Extended Target Tracking with 3D-INSEG and its benefits in dense scenarios
- Fierro Flores, N. I., Adams , M. y Cament, L. (2024). FUSION 2024 (Venice). **In Review**
- Conference.

3D-INSEG: A 3D Instance Segmentation Algorithm for Extended Object Tracking
- Fierro Flores, N. I., Adams , M. y Cament, L. (2023). ICCAIS 2023 (Hanoi).
- Publication.

Structured grammatical evolution for modeling the multi-band light curves of supernova
- Fierro Flores, N. I. y Pilataxi, J. (2023). Structured Grammatical Evolution for Modeling the Multi-band Light Curves of Supernova. Trilogía (Santiago), 38(49), 24-31. Santiago de Chile: Ediciones UTEM.
- Publication.

Professional Experience

Data Scientist / ISAtech — **July 2023 — Present**
PSINet — *Santiago, Chile*
- I have been part of the Data Science team on this project, focused on the development and implementation in production of a system based on Machine Learning and Artificial Intelligence techniques. Our main goal is to streamline the electrocardiogram diagnostic process and achieve an autonomous system that can alert about potential cardiac episodes in patients.
- Contact: Paul Lieutier, email: paul.lieutier@free.fr

Freelance / Data Analysis — **August 2022 — June 2023**
FoxIntelligence — *Paris, France (remote)*
- I was responsible for creating text rules for product classification algorithms in e-commerce. Programming REGEX, visualization using Tableau.
- Contact: Alexandre SENA, email: alexandre.sena@foxintelligence.fr

Robotics Engineer Internship / R&D — **July 2021 — January 2022**
Solystic — *Paris, France*
- Robotics internship in which I implemented the human tracking system on the Soly robot, allowing it to follow humans using LIDAR technology and computer vision.
- Contact: Hicham EL BERNOUSSI, email: hicham.el-bernoussi@solystic.com

Teaching Experience
University of Chile
- Teaching assistant for the Probability and Statistics course. 2019
- Teaching assistant for the Introduction to Calculus course. 2019
- Teaching assistant for the Introduction to Algebra course. 2019
- Teaching assistant for Chemistry in the summer school organized by the University of Chile 2018

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Education

Master of Science in Engineering, Electrical Mention (6.5/7.0), *University of Chile* 2023 — Present

- Currently, I am completing my thesis, which is scheduled for defense in early 2024. The focus of my thesis is on Multi-Target Tracking (MTT) algorithms for extended objects using Random Finite Sets (RFSs) and Bayesian filters. I am employing neural networks and stereo cameras for the segmentation and depth estimation of objects of interest.
- Thanks to the dual-degree program, this thesis allows me to obtain both the Engineer and Master's degrees.

Graduated in Electrical Civil Engineering (6.2/7.0), *University of Chile* 2017 — 2022

- Featured Courses: Computational Intelligence and Robotics Laboratory, Deep Learning, Evolutionary Computation, Introduction to Digital Image Processing, Neural Networks and Information Theory for Learning, Computational Intelligence, Introduction to Data Mining.

Double Degree, *CentraleSupélec* 2019 — 2021

- Generalist engineering education with electives in electronics, artificial intelligence, and programming.
- Featured Courses: Projet de Programmation (Programming Project), Systèmes d'Information et Programmation (Information Systems and Programming), Algorithmique et complexité (Algorithms and Complexity), Réseaux et sécurité (Networks and Security), Traitement de signal (Signal Processing), Statistique et Apprentissage (Statistics and Learning).

Bachelor of Science in Engineering, Electrical Mention (6.1/7.0), *University of Chile* 2017 — 2022

Projects

Transient Examples Generation using GANs August 2023 — Present

- Building a GAN model to generate images of transient objects (Supernovae), including these new examples in the classification model's training set, and validating if the inclusion of this data helps improve binary classification performance.

Dense Object Detection in Retail March 2023 — July 2023

- Developed a model capable of detecting objects on supermarket shelves, which, through mosaic-type data augmentation techniques, surpassed state-of-the-art models.

Smart Garage Door 2021

- Using an ESP32 and proximity sensors, created an Android application that allows monitoring the opening/closing of a garage.

Face Recognition Application Project 2019

- Collaborated with the French company Prisma Media to develop a program capable of providing information about celebrities through facial recognition.

Data Mining: Quora Insincere Questions 2019

- Created a program capable of detecting malicious questions on the Quora question forum using data mining techniques.

Distinctions

National Master's Scholarship, National Agency for Research and Development (ANID) 2023
Best EVIC Poster Award 2022
Outstanding Student 2018 — Present
Andrés Bello Scholarship 2017