

# Alex Gracia Lupotto

MACHINE LEARNING ENGINEER

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## Education

### Carnegie Mellon University (CMU)

Pittsburgh, USA

NON-DEGREE STUDENT

Jan. 2018 - Jan. 2020

- 10-601 Machine Learning, **Prof. Matt Gormley**.
- 10-707 Deep Learning, **Prof. Russ Salakhutdinov**.
- 16-720 Computer Vision, **Prof. Simon Lucey**.

### Ramon Llull University

Barcelona, Spain

B.Sc. IN TELECOMMUNICATIONS SYSTEM ENGINEERING

Sept. 2013 - Nov. 2017

- Major in Algorithms and Image Processing.
- Student representative.

## Professional Experience

### Admira Digital Networks

Barcelona, Spain

MACHINE LEARNING ENGINEER

Jan.2020 - Act.

- Led the **development** of **Covid Defender** project. A.I. solution to detect **mask, temperature, capacity and social distancing** with **Tensorflow.js**, CCTV camera and TV screen.
- **Responsible of deploying** the **Covid Defenders** to national (Spain) and international (Dubai and Mexico) clients.
- **Created a face and body re-identification** CV algorithms for smart counting and customer behaviour in a **NVIDIA Jetson Nano embedded device**. Furthermore, optimized with **TensorRT** framework to improve speed and performance.
- **Established an end-to-end pipeline** communication between A.I. on the edge and Cloud using **Amazon Web Services (AWS)**.

### Human Sensing Laboratory, DeLight Group at CMU

Pittsburgh, USA

MACHINE LEARNING ENGINEER UNDER **PROF. FERNANDO DE LA TORRE** AND **DONG HUANG**

Mar. 2018 - Jan. 2020

- **Lead developer** of **Autel Robotics EVO drone** project (Top 10 Drone company worldwide).
- Developed a **lightweight object detection framework** for **embedded devices** in **PyTorch**, which connected feature extractors with detection heads, including lightweight Computer Vision (CV) algorithms to improve performance.
- **Lead preparation for coding to extract, clean and label unprocessed video data** which expedited the project pipeline.
- Transferred models from **Pytorch** to **Tensorflow** via **ONNX** framework. This made improve the performance allowing to use **TensorRT**.
- **Optimized** potential models by transferring implementation to **TensorRT**, significantly improved the speed of object detection from 5 FPS to 17 FPS for **NVIDIA Jetson TX2 embedded device**.
- **Established testing metrics** (including mAP, TOP-F1, speed and size) to evaluate the suitability of models for further deployment in the drone.

Pittsburgh, USA

LINUX SYSTEMS ADMINISTRATOR UNDER **DONG HUANG** AND **STANISLAV PANEV**

Mar. 2018 - Jan. 2020

- **Built, designed and deployed a scalable LINUX GPU infrastructure** for processing remote CV algorithms.
- Analyzed and oversaw investment decision for the purchase of six GPUs servers, at a cost of \$12k/each, and managed implementation which was critical for Autel Robotics project.
- **Established a scheduling system** with Slurm to balance the workload of the laboratory developers, which improved performance by 60%.
- **Implemented a Network Attached Storage** system to the computer network to backup code and data.
- **Configured six computing nodes** in Debian Linux and oversaw the management and maintenance of the cluster infrastructure.
- Installed and managed all frameworks needed for 12 employees in the lab, including **PyTorch, TensorFlow, Caffe, TensorRT and Cuda**.

## Status 2 Software

Barcelona, Spain

DATA SCIENTIST

Sep. 2016 - Nov. 2018

- **Created a Data Engineering** from two clothes companies in a real environment. Applying MySQL to extract the data of the fashion retail shops
- **Created parsing scripts** using Pandas and Numpy to label, clean and prepare the data for further training Machine Learning (ML) models.
- Applied **Feature Engineering** using libraries such as Pandas and Numpy using KPIs of the retail sector.
- **Applied ML algorithms and techniques** to deal with missing data and normalize the features.
- Applied **metrics to evaluate model** performance (AUC, F1, Precision, Recall). Also, visualized data with tools like Plotly and Matplotlib.
- **Created a predictive system to evaluate customer purchasing decisions** based on transaction information.
- Deployed the algorithm on production using AWS.

## Caixa Capital Risc, CaixaBank

Barcelona, Spain

INVESTMENTS ANALYST INTERN

May. 2017 - Sep. 2018

- **Researched and analyzed tech startups**, and developed investments plans which led to €250k in early seed round funding.
- **Advised projects with CEOs, CMOs and COO** to find technological solutions for their current status in the company.

## Languages and Technologies

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- **Programming Languages:** Python, JavaScript, Bash and C++.
- **Linux Distro:** Debian and CentOS.
- **Deep Learning Frameworks:** PyTorch, TensorFlow, Tensorflow.js, Caffe and TensorRT.
- **Natural languages:** Fluent Catalan, Spanish and English.
- **Data Science tools:** Numpy, Pandas, Scipy, Seaborn and Matplotlib.
- **Data Bases:** MongoDB and MySQL.

## General Information

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### Academic Honor Awards

Barcelona, Spain

RAMON LLULL UNIVERSITY

Nov. 2017

- **B. Sc. awarded with honors for final thesis (10/10):** *Optimization of promotions in the retail sector with Machine Learning.*
- Graduated in **top 5% of cohort.**

### Side-projects

- **Technology consultant** of a software company **Segmentail**, CRM for fashion retail.
- **Content creator** of **ai.with.alex**, instagram page to share my journey and knowledge of A.I. to help people interested in this discipline.
- **Co-founder** of a Robotic Process Automation (RPA) and NLP algorithm to automate the search and sell of tickets in the music industry.

### Interests and Hobbies

- Half-Marathon runner, passionate about Martial Arts – competed in amateur Muay Thai and Mugendo competitions.
- Started La Cúpula Barcelona with friends, a local music event company.