Antonio Guillen-Perez

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Deep Reinforcement Learning Researcher

Passionate about **machine learning** and **AI** Ph.D. researcher with **4+** years of experience in **applied AI** and **deep reinforcement learning**, with huge passion for research and solving real-world problems such as cooperative autonomous driving using **multi-agent deep reinforcement learning**, in a collaborative open source style, and strong analytical skills, focus on quality of results and outcomes.

SKILLS

PROGRAMMING
Python, iPython Notebook
Java, C++

ARTIFICIAL INTELLIGENCE
Machine Learning (Sklearn)
Deep Learning (Pytorch, Tensorflow)
Reinforcement Learning (Gym, MuJoCo)
Multi-Task / Multi-Modal Learning
Imbalanced Learning
Zero-Shot Learning
Imitation Learning (IRL, LfO, LfD)
Meta Learning
Time Series Forecasting

DATA ANALYST
Data Wrangling (Numpy, Pandas)
Data Visualization (Matplotlib, Seaborn)
Model Interpretability (Captum)
Statistics (StatsModels, Scipy)
High-efficiency software (Dask, CUDA)
Data Debugging (A/B, Logging, Unittest)
Git and Github
Amazon Web Services

COURSEWORK

Deep Reinforcement Learning
- Deep Reinforcement Learning - Nanodegree. Udacity
- Practical Reinforcement Learning. Coursera Course Certicates
- Practical Deep Reinforcement Learning for Coders v.1. fast.ai

Computer Vision & Time Series
- Time Series Forecasting. Udacity
- Sequences, Time Series, and Prediction. deeplearning.ai
- Convolution Neural Networks in TensorFlow. deeplearning.ai
- Deep Learning Specialization. deeplearning.ai

LINKS

Github://**AntonioAlgaida**
LinkedIn://**antonioguillenperez**
Researchgate://**Antonio_Guillen-Perez**
Google Scholar://**Antonio Guillen-Perez**
Twitter://**agnprz**
Alt email://antonio _ algaida at hotmail

EXPERIENCE & EDUCATION

PH.D. | Computer Science, Autonomous Vehicles, and Wireless Comm.
Sep 2018 – Jun 2022 | UPCT | Cartagena, Murcia, Spain

- **Multi-Agent** system trained by **Deep Reinforcement Learning** techniques to control **autonomous vehicles** at intersections in a **cooperative** way using 5G
- I achieved a system capable of effectively controlling **autonomous vehicles** in urban environments that **eliminated accidents** and reduced the **waiting time** by more than **94%** using **collective intelligence**, **learning from demonstration**, and **MADRL**

PREDOCTORAL STAY | University of California, Davis
Jul 2021 – Jan 2022 | Davis, CA, US

- Early detection of throat cancer by biomarker analysis using **NN** specialized in **signal processing** such as LSTM, **transformers**, and **attention mechanisms**
- I obtained an accuracy of over **90%** and I have opened a new **research path** for new platforms capable of **detecting** an infinite **number of diseases**

ASSOCIATE PROFESSOR | Distributed Systems and Services
Sep 2018 – May 2022 | UPCT | Cartagena, Murcia, Spain

- Introducing the students to the concepts of **distributed systems**, such as communication between **remote processes**, **synchronization**, **coordination** and **agreement** techniques, and finally, learning about the characteristics and operation of various types of distributed services

DOLPHIN WAVE | ML and Data Scientist
Feb 2018 – Sep 2018 | Murcia, Spain

- Build **ML predictive** models for mobility research of **people** in closed environments
- Develop a Deep Learning **Multivariate** Time Series Forecasting technique with **Transformers** for item demands
- Visualization of **univariate** and **multivariate** clusters of people mobility and their **prediction** for **business intelligence** tools

MS. & BS. | Electrical, Electronics and Communications Engineering
Sep 2016 – Sep 2018 | Murcia, Spain

- Skills in electromagnetic, signal processing, communication systems (WiFi, Bluetooth, 5G, etc.), programming, circuit design, antennas, RADAR, and embedded systems.

RELATED RESEARCH

JOURNALS ARTICLES
- G.-P.,A. & C.,M.-D., *Multi-Agent Deep Reinforcement Learning to Manage Connected Autonomous Vehicles at Tomorrow's Intersections*, 2022. IEEE Transactions on Vehicular Technology, doi:10.1109/TVT.2022.3169907.
- G.-P.,A. & C.,M.-D., *AIM5LA: A Latency-Aware Deep Reinforcement Learning-Based AIM for 5G Communication Networks*, 2022, Sensors, doi:10.3390/s22062217.
- G.-P.,A. & C.,M.-D., *Learning from Oracle Demonstrations – A new approach to develop AIM control algorithms based on MADRL*, Accepted. IEEE Access.

CONFERENCE PROCEEDINGS
- G.-P.,A. & C.,M.-D., *RAIM: Reinforced Autonomous Intersection Management*, In 34th Conference (NeurIPS) 2020 - Challenges of Real-World RL Workshop, Virtually.
- G.-P.,A. & C.,M.-D., *How super-resolution can help connected autonomous vehicles*, VI doctoral conferences UPCT, University of Murcia. 2020. Oral communication.