JESUS GARCIA RAMIREZ

Machine Learning Engineer

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EDUCATION

Advanced Master's in Artificial Intelligence

KU Leuven

2020

- Graduated **Magna Cum Laude**
- Thesis: Efficient analysis of mobile eye tracker data using deep learning

Erasmus exchange

KU Leuven

2019 - 2020

B.Sc. in Industrial Engineering

University of Seville

2015 - 2019

- Major in **Systems Control**

SKILLS

Python | Pytorch | Pandas | Scikit-Learn | OpenCV | Matlab | NumPy | SciPy | Git | CNNs | Computer Vision | Control Systems

STRENGTHS

Quick Learner

Seamless **project transitions** during PhD, leading **Brain-Machine Interface** development and developing **CNN models** for precise neuron responses predictions

Pro-Active

Throughout my PhD, I consistently **took initiative to find solutions** to novel research questions

Effective Communication

Presented research outcomes in **interdisciplinary teams**, creating **interactive visualizations** and presenting at **international conferences**

SUMMARY

Leveraging a passion for **learning and research**, I excel in **translating** complex **challenges** into practical **machine learning solutions**. Committed to **continuous** personal and professional **growth**, drawing **inspiration** from the discipline and focus cultivated through my passion for **running**.

EXPERIENCE

PhD Candidate

KU Leuven — 01/2022 - Present

- Developed **CNN-based encoding** models for predicting individual neuron responses to naturalistic images recorded from visual cortex of epileptic patients
- Successfully developed and **fine-tuned CNN-based** encoding models, **explaining 80%** of the explainable **variance** within the neural responses
- Created an **interactive visualization** to showcase the relationship between the presented images and the neural response patterns within the latent space of trained models by using **UMAP** to reduce the latent space dimensionality
- **Tech stack**: **Python, PyTorch, Scikit-Learn, OpenCV, SciPy, NumPy, Bokeh**

Research Engineer

KU Leuven — 12/2020 - 01/2022

- Led the development of a cutting-edge **decoding pipeline** for mapping intended arm movements to **3D simulated robot trajectories** using macaque neural data
- Implemented a **novel nonlinear** extension of **Kalman filter** models, achieving over **90%** of decoding **success rate** with order of **µs inference latency**
- Developed an **online retraining** procedure, resulting in a substantial **92% reduction** in the amount of **data required** to train the decoding models
- **Tech stack: Python, Pandas, Scikit-Learn, SciPy, Matlab, NumPy**

PROJECTS

Efficient analysis of mobile eye tracker data using Deep Learning

2019 - 2020

https://github.com/gestaltrevision/tracking-vermeersch

- Developed an **automatic labelling tool** to streamline the analysis of **mobile eye-tracking** recordings during an art exhibition
- Achieved over **90% accuracy** in predicting participant's observed item by **fine-tuning** the state-of-the-art **video classification** model, using a manually curated **10k-sample dataset**
- **Adapted** and **trained ResNet** based architectures using recorded accelerometer, gaze, and gyroscope data for **behaviour prediction**, attaining over **70% accuracy**
- **Tech stack: Python, OpenCV, Pandas, PyTorch, SciPy**

CONFERENCE PROCEEDINGS

Single neuron signatures of spatial attention in the human lateral occipital complex

Society for Neuroscience — 11/2023 — Washington, USA

Comparing reach direction decoding in macaque ventral premotor, dorsal premotor and primary motor cortex

Neural Control of Movement — 04/2023 — Victoria, Canada

Single unit correlates of visual reasoning in the human lateral occipital complex

Society for Neuroscience — 11/2022 — San Diego, USA

Object decoding with spatial attention in the human lateral occipital complex

Federation of European Neuroscience Societies — 07/2022 — Paris, France

Decoding reaching direction from macaque dorsal and ventral premotor and primary cortex

Society for Neuroscience — 11/2021 — Chicago, USA