David Munoz-Tord

Geneva, Switzerland
david.munoztord@mailbox.org
david-munoztord.com
munozt0
david-munoz-tord

Skills

R	10 yrs.
Python	5 yrs.
JavaScript	3 yrs.
Bash	10 yr.
SQL	4 yrs.
Matlab	4 yr.
Data Analysis	9 years
Data Engineering	5 yrs.
Data Visualization	7 years

Libraries

- Rstan, brms, JAGS, hBayesDM
- H2O, XGBoost, LightGBM
- tidymodels, caret, mlr
- TensorFlow, Keras, PyTorch, Scikit-learn
- tidyverse, data.table, dplyr

Tools/Frameworks

- Git, Terminal
- Docker
- CI/CD
- AWS
- ML OPS
- ETL

Summary

Driven and knowledgeable researcher with a solid academic foundation in neuroscience, statistics, and computer science. Proficient in advanced statistical methods, experimental design, and computational modeling, with a demonstrated ability to integrate interdisciplinary approaches. Experienced in collaborating with diverse research teams and utilizing state-of-the-art technologies for data acquisition and analysis. Committed to pursuing innovative research questions.

Experience

Data Scientist — **01/2024 - Present**

Freelancer

– Led the development and launch of a scientific project in collaboration with EPFL, transitioning initial scripts into an accessible software to clients via the cloud.

– Offered technical consulting to a biotech start up, translating academic research into actionable solutions, while also advising on machine learning implementations.

– Within an NGO, collaborated with cross-functional teams to develop and implement data reporting infrastucture and implemented process automation best practices.

Data Scientist — **04/2022 - 01/2024**

FlowBank

– Conducted in-depth analysis to classify customers using Bayesian inference, revealing distinct segments and patterns for data-driven decision-making and targeted strategies.

– Engineered and deployed a sophisticated fraud detection system, leveraging neural networks and support vector machines to accurately identify fraudulent activities.

– Developed new internal tools for data analysts in the form of R packages, and provided training and support for their use.

– Designed and implemented a data warehouse solution for efficient data processing and orchestration, contributing to streamlined data engineering workflows.

– Led the development of a comprehensive ML-Ops infrastructure for the data science team, including Docker environments for Julia, R, and Python.

– Designed and maintained a Shiny server, allowing scalable data visualization dashboards in R and python for easy monitoring of key performance indicators.

Lecturer in Biotatistics — **09/2020 - 01/2022**

University of Geneva

– Conducted lectures on statistics for the graduate program andmentored students in their research projects, providing guidance on statistical analysis and data visualization.

– Created and shared freely available data workshops in R and Python.

PhD Candidate in Computational Neuroscience — **03/2020 - 01/2022**

Lemanic Neuroscience Doctoral School

– Used various statistical methods to analyze large scale datasets: Hierarchical Bayesian modeling, Multivariate pattern analysis, and model-free reinforcement learning.

– Applied programming skills in R, python and MATLAB, along with proficiency in neuroimaging and computing software such as Nipype, FSL, AFNI, and SPM

– Implemented model-free reinforcement learning (Q-learning algorithm) to investigate the computational basis of choices.

– Processed terabytes raw DICOM data to BIDS format, creating analyzed and reproducible shareable data for large-scale longitudinal clinical trials (EEG/fMRI signals and blood samples).

– Collaborated with Caltech data engineers to implement ICA-based denoiseification for better identification of activation and artifact components in fMRI.

Internship in Computational Neuroscience — **03/2019 - 03/2020**

Geneva Neurocenter

– Contributed to the advancement of research methodologies by exploring the application of theory-driven modeling approaches to real-world datasets, under the guidance of Pr. Lebreton.

Education

Ph.D. in Computational Neuroscience

03/2020 - 01/2022
Campus Biotech - Switzerland
Topic: Differential contributions of ventral striatum subregions to the motivational and hedonic components of the affective processing of reward. Supervised by Pr. Coppin & Pr. Sander

MSc in Neuroscience

09/2018 - 03/2020
University of Geneva - Switzerland
Thesis: Denoising of high resolution fMRI signal using tICA. Supervised by Pr. Pool

Complementary Studies in Computer Science

09/2017 - 06/2018
Smith College - USA
Capstone: Statistical methods for exoplanet detection. Supervised by Pr. Baumer

BSc in Cognitive Science

09/2014 - 06/2017
University of Geneva - Switzerland
Thesis: Event-related potential evidence of auditory spatial attention towards aggressive vocalizations. Supervised by Pr. Burra.

Languages

French	Native
Spanish	Native
English	Fluent
German	B2

Technical Skills

- Data Sctuctures and Algorithms
- Machine Learning
- Linux System Administration
- Visualization for Scientific Data
- Bayesian Statitics

Extracurricular

- Top 2% on StackOverflow (2024)
- Top 25% on GitHub (2023)
- Global Fellow scholarship (2017)

Engaged in rigorous model validation of various findings from existing literature using open-source data, assessing the efficacy of parameter recovery techniques.

Projects

See my github profile for a more comprehensive list of open source projects.

Co-President — **We Data**
R, Python, Rust, JavaScript

– We Data is an organization that shares knowledge on code in data science (Blog, YouTube channel), give workshops about statistics, and do coding demonstrations. We also organize the R-Lunches.

Maintainer — **echarts4r**
R, JavaScript

– Collaborated on the development of echarts4r, a R package that expands the capabilities of R-based interactive visualizations with a powerful rendering engine, while enhancing flexibility and ease of use.

Collaborator — **hBayesDM**
STAN, R, Python

– Collaborated on the Hierarchical Bayesian modeling of Decision-Making tasks library (hBayesDM). Built Q-learning algorithm for probabilistic selection task.

Collaborator — **3dLMEr**
BASH, R

– Collaborated on the AFNI's functions for 3Dimensional Linear Mixed-Effects Regression (3dLMEr). Fixed residuals output image by adding bottom tolerance.

Publications

Investigating the effect of liraglutide on self-reported liking and neural responses to food stimuli. Coppin, G., Munoz Tord, D., Pool, Cereghetti, D., Golay, A., Sander, D., & Pataky, Z. *Journal of Obesity* (2023) - Paper

Differential contributions of ventral striatum subregions to the motivational and hedonic components of the affective processing of reward. Pool, E. R., Munoz Tord, D. , Delplanque, S., Stussi, Y., Cereghetti, D., Vuilleumier, P., & Sander, D. *Journal of Neuroscience* (2022) - Paper

3D-printed pacifier-shaped mouthpiece for fMRI-compatible gustometers. Munoz Tord, D., Coppin, G., Pool, E. R., Mermoud, C., Pataky, Z., Sander, D., & Delplanque, S. *Eneuro* (2021) - Paper

Early spatial attention deployment towards aggressive voices. Burra, N., Kerzel, D., Munoz Tord, D., Grandjean, D., & Ceravolo, L. *Social Cognitive and Affective Neuroscience* (2019) - Paper

References

Pierre Saouter: **Head of Data Science at FlowBank**, (e-mail)

Ben Meuleman: **Statistician at University of Geneva**, (e-mail)

David Sander: **Director of the Center for Affective Sciences**, (e-mail)

Jose Nunes : **Professor of Biostatistics at the University of Geneva**, (e-mail)

Eva R. Pool : **Professor at University of Geneva**, (e-mail)

Maël Lebreton: **Professor of Neuroeconomics at Paris School of Economics**, (e-mail)