Federico Calesella

GitHub | Google Scholar

Location: Milan, Italy
Email: f.calesella@gmail.com
Mobile: +39 3469538157

Summary

I am a data analyst in the field of computational cognitive neuroscience specialized in applying machine learning to biomedical and healthcare data. With over five years of experience, I have developed predictive models for clinical and behavioral outcomes, diagnosis identification, and treatment response. My technical proficiency spans Python, MATLAB, and R, with expertise in machine learning libraries like Scikit-learn, PyTorch, and Keras. Outside my technical work, I am passionate about translating complex data into actionable insights.

Key Skills

Data Analysis & Machine Learning
Expertise in developing predictive models, data preprocessing, feature engineering, and validation techniques.

Programming & Tools
Proficient in Python (Pandas, NumPy, Scikit-learn, PyTorch, Keras), R, MATLAB, and visualization libraries like Matplotlib.

Statistical Analysis
Experience in statistical modeling, hypothesis testing, and analysis of large, complex datasets.

High-Performance Computing
Skilled in leveraging HPC resources for large-scale computations, parallel processing, and optimizing workflows.

Project Management
Skilled in leading multidisciplinary teams, managing timelines, and delivering results in collaborative environments.

Communication
Strong ability to convey complex concepts to diverse audiences through written reports, presentations, and team interactions.

Experience

Postdoctoral researcher Oct 2024 – Present
Padova Neuroscience Center, University of Padova *Padova, Italy*

- Designed and implemented machine learning and deep learning models to predict behavioral outcomes in neurological populations.
- Collaborated with an interdisciplinary team of psychologists, neuroscientists, physicists, and engineers to deliver impactful research projects.
- Translated complex neuroscience problems into data-driven solutions using cutting-edge analytical techniques.

Postdoctoral researcher Oct 2023 – Oct 2024
Psychiatry and Clinical Psychobiology Unit, Division of Neuroscience, IRCCS San Raffaele Hospital *Milan, Italy*

- Developed machine learning models to predict behavioral patterns and clinical outcomes in psychiatric populations.
- Led interdisciplinary teams, managing timelines, delegating tasks, and ensuring successful project completion.
- Authored scientific papers and drafted reports and funding proposals.

Education

PhD – Cognitive Neuroscience Oct 2020 – Oct 2023
Psychiatry and Clinical Psychobiology Unit, Vita Salute S. Raffaele University *Milan, Italy*

- Leveraged inferential statistics and machine learning techniques to analyze large multimodal biomedical datasets.
- Authored scientific papers and presented findings at international conferences.

Vita Salute San Raffaele University Milan, Italy
Master's degree – Psychology, Cognitive Neuroscience *Sep 2016 – Feb 2019*

Vita Salute San Raffaele University Milan, Italy
Bachelor's degree – Psychological Science and Techniques *Sep 2013 – Sep 2016*

Projects

Predicting Neuropsychological Deficits in Stroke Patients *Publication* Source code
Developed a machine learning pipeline to predict neuropsychological deficits from resting-state functional connectivity data of stroke patients, optimizing feature extraction techniques for improved classification performance.

Biomarkers for Suicide Risk Prediction in Bipolar Depression *Publication* Source code
Created a machine learning model to identify depressed bipolar patients with a history of suicide attempts with 94% of accuracy by analyzing brain habituation patterns. Developed a Python package for brain-wise habituation analysis from fMRI data.

Differentiation of Major Depressive and Bipolar Disorder Patients *Publication* Source code
Developed classification models achieving 80% accuracy in differentiating major depression and bipolar disorder patients using multimodal datasets, including clinical, neuroimaging, and genetic markers.

Machine Learning for Post-partum Depression Risk Prediction *EU Horizon project* Results under embargo
Planned and conducted machine learning analysis on very large datasets of clinical health records (>500.000 patients) to predict the risk of postpartum depression, contributing to the development of a large-scale digital-health tool.

Identification of Depressed Patients with Cognitive Deficits *Publication*
Applied machine learning techniques on peripheral inflammatory markers to identify cognitive impairments in depressed patients, achieving a performance between 76% and 89% for different cognitive domains.

Professional Development

- Computational Psychiatry Course 2022, Translational Neuromodeling Unit, University of Zurich & ETH Zurich, 12-16 September 2022
- Neural Networks and Deep Learning, Dr. Alberto Testolin, University of Padova, 2019-2020
- Practical Course to Machine Learning in R, Luca Naso, Udemy, 2019
- Python for Computer Vision with OpenCV and Deep Learning, Jose Portilla, Udemy, 2019

Languages

- English: C1 Level (IELTS 7.5)
- Italian: Native

Additional information

Publications
Published multiple peer-reviewed articles on machine learning applications (h-index: 10).

Awards
Awarded three times "Excellence Award" at international conferences for research contributions.

Teaching Activity
Teaching assistant for courses about the application of machine learning techniques in neuroscience.

Supervision Activity
Supervised master theses and post-graduate trainees, guiding students through their research projects until completion.