

ML  
JC

Machine  
Learning  
Journal  
Club





# Our Story

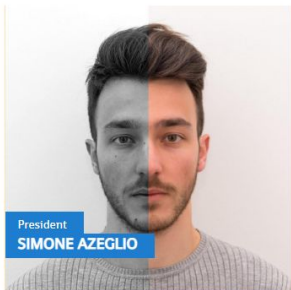
- We started our first activities as a little **group of students** from the Master of Science in Physics of Complex Systems at the University of Turin. We were curious about all the emergent possibilities connected to *Data Mining*, *Machine Learning* and *Artificial Intelligence*.
- At some point we decided to interact with students from different backgrounds: in order to build some **common knowledge**. As we met new people from other departments, the group enlarged, and we now have members coming from **heterogenous fields** (computer science, engineering, mathematics, economics, and so on).
- We meet regularly, in order to work and organize projects related to Machine Learning and its applications.



## What we do

The aim of our association is to promote the knowledge of machine learning and artificial intelligence in different fields. We believe interdisciplinary and interactions between fields can be the key to make new discoveries and to produce useful and interesting ideas.

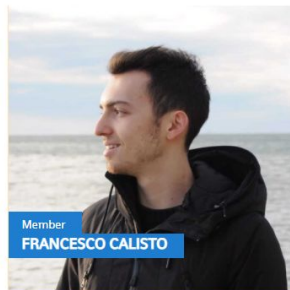
We try to innovate knowledge and methods from different disciplines using the new instruments available thanks to machine learning and artificial intelligence.



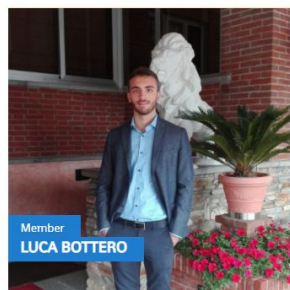
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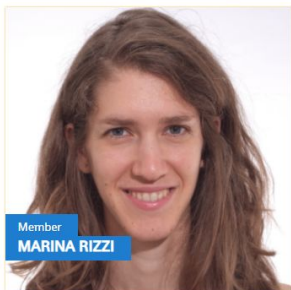
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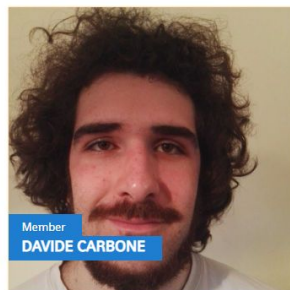
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**PIO RAFFAELE FINA**



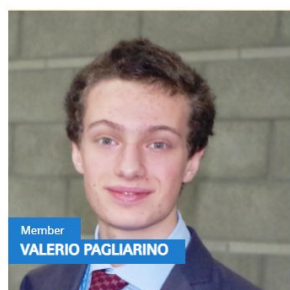
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**MARINA RIZZI**



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**GIORGIO DALMASSO**



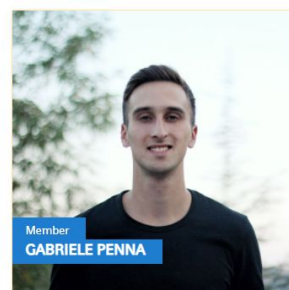
Member  
**DAVIDE CARBONE**



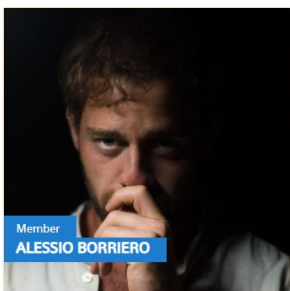
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**GABRIELE PENNA**



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Member  
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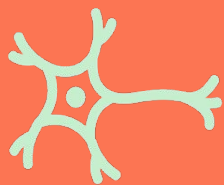
Member  
**MATTEO FORDIANI**



Member  
**LETIZIA PIZZINI**

# MedicAI

for BCI





# MedicAI Outline

Here at MLJC we believe that AI techniques and tools can aid people and doctors in many different ways. For this reason, we decided to start the *MedicAI* project to explore and make contributions to applied AI in medicine and eHealth. We decided to pursue two paths:

- **Brain Computer Interface:** explore how neural activity signals can be employed to control and communicate with machines.
- **Bio-Medical Signal Analysis:** explore how information can be extracted from signals of living objects.

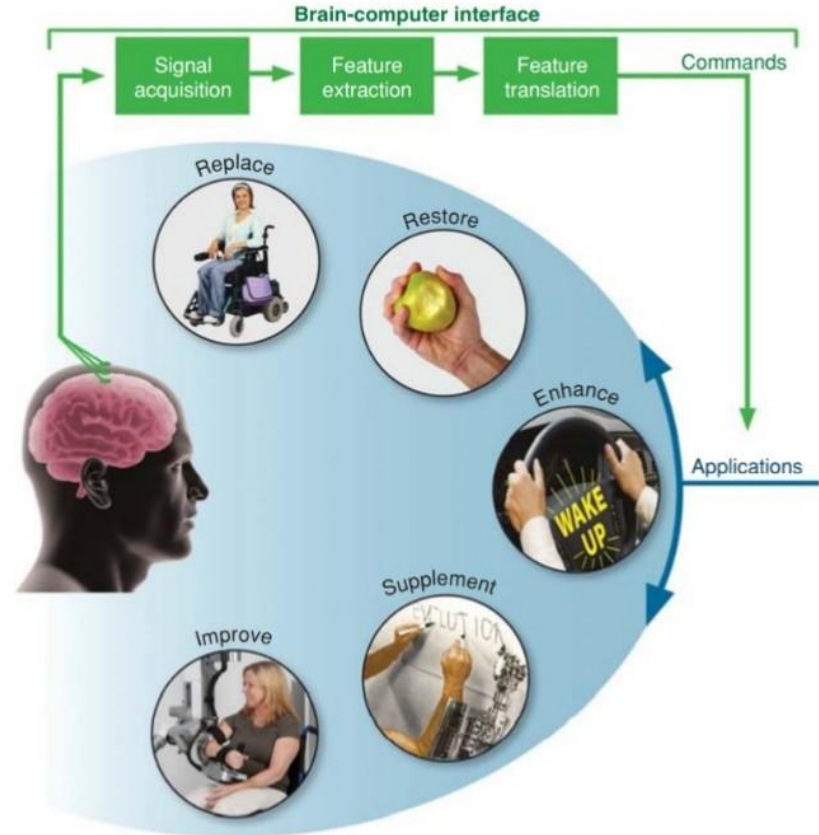
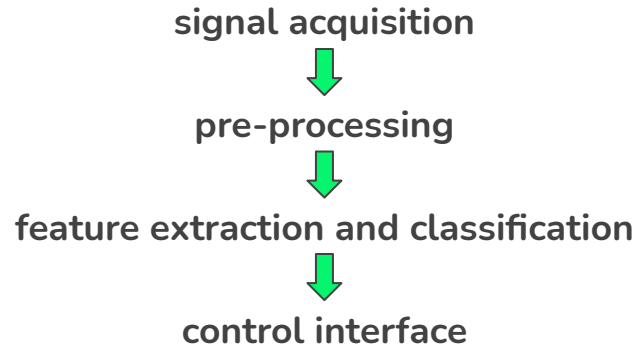


# BCI

## What is a BCI?

a BCI is a system that allows direct communication between the brain and a computational device.

## What are the steps?





# BCI Path

Main path of MedicAI group for next months:

- Learning: MOOC by Christian Kothe
- Spring School & Hackaton
- BCI Awards





# Learning

Before the spring school we'll take an online course offered by UCSD: "[Introduction to Modern BCI Design](#)" with these goals in mind:

- Take a first step into BCI world.
- Acquire a common vocabulary for a better team communication.
- Be ready for the spring school.
- Produce written lecture's note.



# Spring School

- Free spring school hosted by [Gtech](#)
- 2 days [br4in.io](#) hackton in the middle (decision to participate in, will come later...)
- 5/6 hr at day for 10 days of committment, some overlapping with university lessons

## VIRTUAL BR41N.IO HACKATHON

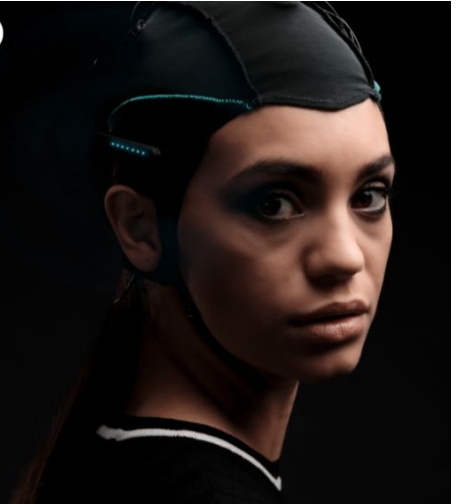
📅 April 17-18, 2021

during the

Spring School 2021\*

[SIGN UP FOR A PROJECT](#)

  
**IEEE** brain





# Program

**DAY 1** ▪ BCI with EEG and other biosignals ▪ 1 credit

**DAY 2** ▪ Motor rehabilitation with BCI ▪ 1 credit

**DAY 3** ▪ Invasive BCI and brain stimulation ▪ 1 credit

**DAY 4** ▪ BCI with EEG/fNIRS and hyperscanning ▪ 1 credit

**DAY 5** ▪ Brain assessment, Neuromarketing and Unicorn brain interface ▪ 1 credit

**DAY 6+7** ▪ BR41N.IO Hackathon ▪ 2 credits

**DAY 8** ▪ BCIs for stroke rehabilitation ▪ 1 credit

**DAY 9** ▪ BCIs for brain assessment, communication with DOC, ALS and Locked-in patients ▪ 1 credit

**DAY 10** ▪ Functional mapping with ECoG ▪ 1 credit



# BCI Award

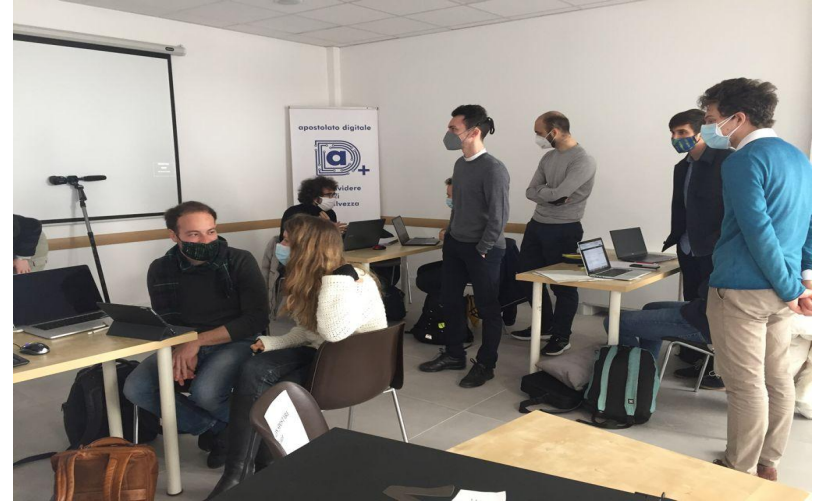
After the spring school we can start to design a project for the [Annual BCI Award](#)

- Submission deadline 01/08/21
- 1st to 3rd classification money prize

[Here](#) the 1st place winner of the BCI Award 2020 video submission



# Br41n 2020



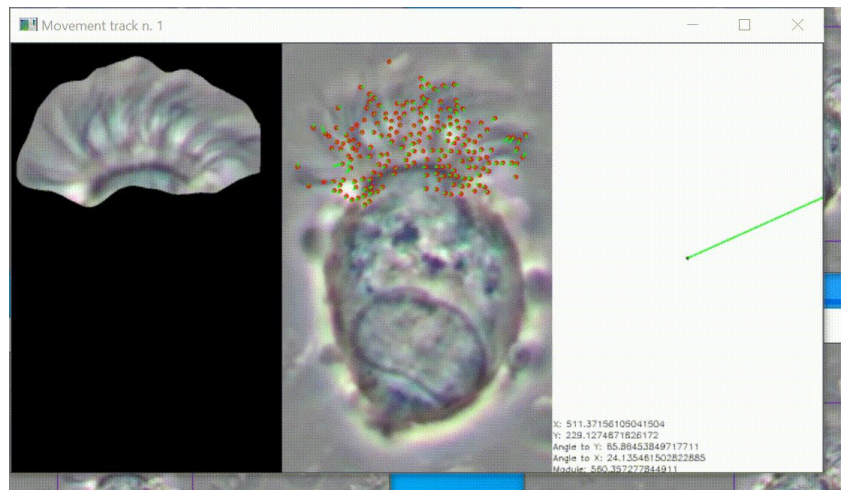
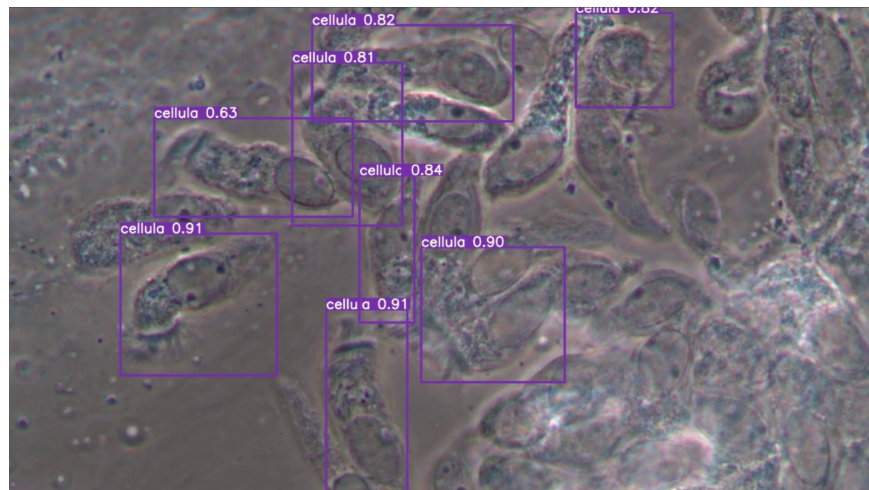
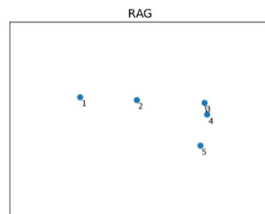
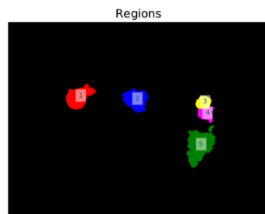
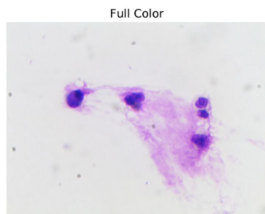
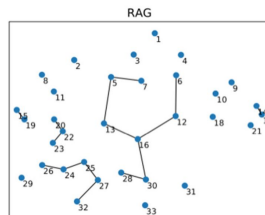
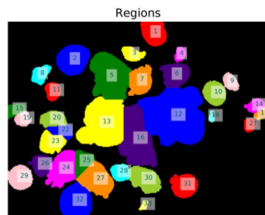
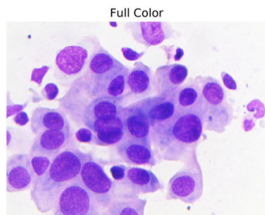
- Worldwide coding competition on BCI
- Stroke rehab and Unresponsive Wakefulness Syndrome data analysis
- Be creative, choose your methods and present your results
- 2 days nonstop: work, share and have fun!



# BioMedical Path

Side path where we can learn techniques and tools on biological signals and related topics such as

- Time series signals: EEG, EEC, ...
- Biomedical Imaging: Microscopy, PET, MRI, ...
- Preprocessing: Data cleaning, noise filtering, ...
- Computer Vision: object recognition, segmentation, ...





## How?

- Get our hands dirty: "short burst" challenges and hackatons
- Self-organized Projects





# Self-organized Projects

- MLJC is always open to new ideas and project. If you have one, propose to us and use MLJC to find other people interested in.
- The organization is up to you but we are open to discussions and support!

# Contacts

*For more information, please contact us at:*



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