Lassi Michael

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Date of birth: **10/11/1995**

PhD student in Biorobotics at the Computational Neuroengineering Lab. Fascinated by data analysis, machine learning and neuroscientific research. With a problem-solver attitude, I am comfortable working in a team and in challenging environments. I am always trying to learn from others and to give my original contribution.

Work Experience and Projects

- **Machine learning algorithms for the prediction of neurological disorders** — **Pisa, IT**
  PhD Degree, Sant'Anna School of Advanced Studies — *October 2020 - In progress*
  - Developing algorithms for the prognosis of rehabilitation outcome after stroke and for the onset prediction of Alzheimer's disease by merging multi-modal (neural, genetic, clinical) data.
  - Working closely with clinical partners and performing data collection on stroke subjects.

- **Analysis and prediction of motor responses elicited by TMS** — **Genève, CH**
  Master Project, UPHUMMEL Laboratory, EPFL — *September 2019 - February 2020*
  Supervisor: Prof. Hummel Friedhelm
  - Evaluation of predictability of multi-muscle motor responses to TMS through the use of machine learning models.
  - Evaluation of the possible presence of synergistic responses in motor evoked potentials after TMS stimulation.
  - Developed small GUI in Matlab for synergies extraction of multiple muscle responses elicited by TMS.
  - Acquired experimental knowledge in EMG signal acquisition and transcranial magnetic stimulation.

- **Computer vision for 3D hands pose reconstruction** — **Lausanne, CH**
  Internship, Logitech Europe SA — *February 2019 - August 2019*
  - Use of deep learning algorithms to estimate position of hands' keypoints in RGB images.
  - Combination of classical computer vision models and neural networks to achieve real-time pose estimation without loss of accuracy.
  - Software development in C++ to process video stream.

- **Sensorimotor control of fine grasping in primates** — **Fribourg, CH**
  Semester project, TNE Laboratory, EPFL — *September 2018 - January 2019*
  Supervisor: Prof. Micera Silvestro
  - Processing of kinematic macaque's upper limb data, as well as neural data from motor cortex.
  - Exploration of a dataset of local field potentials, in order to extract significant and consistent features of grasping behavior.
  - Use of supervised machine learning tools in order to decode different kind of grasping behaviors from monkey's cortical activity.

- **Natural control of a BCI-driven robot** — **Lausanne, CH**
  Course Project, CNBI - Center for non-invasive brain interfaces — *February 2018 - June 2018*
  Prof. Millán José del R.

- Teamwork-based project to develop a classifier able to distinguish left and right hand motor-imagery tasks from cortical electroencephalographic data.
- Performance assessment in real-time application of various supervised machine learning algorithms.
- Basic experience in the use of 16 channel EEG recording systems.

- **Humanoid robot control for rehabilitation** **Milano, IT**
  Bachelor's Thesis, NEARLab - Neuroengineering and Medical Robotics Lab *March 2017–July 2017*
  Supervisor: Prof. Pedrocchi Alessandra
  - Development of C++ software for the integration of Inertial Measurement Units and humanoid NAO Robot, via movement mirroring.
  - Programmed basic robot interactions with the user.
  - Postprocessing analysis and evaluation of subjects' task execution based on Matlab scripts.

Education

- **École Polytechnique Federale de Lausanne (EPFL)** **Lausanne, CH**
  Master's degree, Bioengineering (Neuroprosthetics), ***GPA: 5.68/6*** *September 2017 – February 2020*
  Data Analysis, Neuroscience, Machine Learning, Brain-Computer Interaction
  Locomotion Analysis, Signal Processing, Neuroengineering
  Award: Excellence Fellowship

- **Politecnico di Milano** **Milano, IT**
  Bachelor's Degree, Bioengineering, ***Grade: 110/110 cum laude*** *October 2014 – July 2017*
  Biomechanics, Biomaterials,
  Principles of Electronics, Computer Science
  Award: Premio Migliori Matricole 2014 (Best Freshman Award)

- **Liceo Scientifico A. Einstein** **Rimini, IT**
  Secondary Diploma, Grade: 100/100 cum laude *September 2009–July 2014*
  Award: Albo Nazionale delle Eccellenze 2013 (National Board of Excellence)

Technical and Personal skills

- **Programming Languages**:
  - Python
  - Matlab
  - C++
  - C
- **Languages:**
  - Italian: Native
  - English: C1 (IELTS Certificate 2017: 8.0/9.0),
  - French: Basic skills
- **Industrial Software**:
  - MS Office
  - LaTeX
  - Visual Studio
  - Comsol Multiphysics
  - Vicon Nexus
- **General Skills**:
  - Good oral presentation skills
  - Teamwork attitude
  - Keeping rational in front of problems
  - Eager to learn new skills