Stefano Diomedi

DATE of BIRTH:	25 December 1991
STREET ADDRES:	Vicolo Bianchetti 4, 40125 Bologna, Italy
TELEPHONE:	+39 339 855 08 59
E-MAIL:	stefano.diomedi2@unibo.it

EDUCATION

RESEARCH FELLOW
2021-2022

Department of Biomedical and Neuromotor Sciences
Alma Mater Studiorum – University of Bologna

Laboratory: Neurophysiology of the Visuomotor Systems
Department of Biomedical and Neuromotor Sciences

PH.D.
2018-2021

Course of Biomedical and Neuromotor Sciences
Alma Mater Studiorum – University of Bologna

Laboratory: Neurophysiology of the Visuomotor Systems
Department of Biomedical and Neuromotor Sciences

Supervisor: Prof. Patrizia Fattori

Thesis: "Neural states in parietal areas during arm reaching"

Activites: Analysis of macaque elettrophisiological recording by implementing machine learning methods in MATLAB environment.

MASTER DEGREE
2015-2018

Mathematics
Alma Mater Studiorum – University of Bologna

Final mark: 110/110 cum laude

Thesis: "Reconstruction of retinotopic maps by Gabor filtres"
Relator: Prof. Giovanna Citti; Co-relator: Ph.D. Noemi Montobbio

Activites: Analysis of human fMRI data by implementing mathematical model in MATLAB environment and visualisation using FreeSurfer software.

BACHELOR DEGREE
2011-2015

Mathematics
Alma Mater Studiorum – University of Bologna

Thesis: "Wiener's attack to RSA"
Relator: prof. Davide Aliffi

ADDITIONAL EDUCATION

COURSE
12-23 April 2021

"FELASA accredited Course "EUPRIM-Net Laboratory Animal Science Course on Non-Human Primates""
Online
Organized by DPZ, Gottingen - Germany

COURSE
Feb – Jun 2021

"Computational Matemathics"
Bologna (BO), Italy
Organized by Bachelor degree in Matemathics– University of Bologna

WORKSHOP
28-29 Sept 2020
"Animal Welfare of non-human primates and other large laboratory animals"
Online
COST action CA 15131: PrimTrain

COURSE
28 Jan 4-5 Feb 2020
"Employment of animals for scientific and educative purpose – Level 1"
Bologna (BO), Italy
Organized by Dept. of Veterinary Medical Sciences and AUSL MODENA
University of Bologna

SUMMER SCHOOL
2-8 Jun 2019
"Brain reading and writing new perspectives of neurotechnology"
Bertinoro (FC), Italy
Organized by Federation of European Neuroscience Societies (FENS)

COURSE
Apr-May 2019
"Epigeum Ph.D. of Medical School Level 1 Accademic English"
Bologna (BO), Italy
Organized by University Language Center (CLA) – University of Bologna

COURSE
Mar – May 2019
"Statistical models and application"
Organized by Master degree in Statistical Sciences – University of Bologna

WORKSHOP
28 Jan 2019
"Intelligent Machines and Mathematics"
Bologna (BO), Italy
Organized by Dept. of Mathematics – University of Bologna

WORKSHOP
11 Jan 2019
"Evidence based training of large laboratory animals"
Leuven, Belgium
Organized by Katholieke Universiteit Leuven, Belgium
COST action CA 15131: PrimTrain - KU Leuven (Belgium)

COURSE
Feb-May 2019
"Cognitive Neurophisiology"
Bologna (BO), Italy
Organized by Master degree in Pharmacy– University of Bologna

COURSE
Oct-Dec 2018
"Machine learning"
Bologna (BO), Italy
Organized by Master degree in Computer Science – University of Bologna

CONFERENCE
24-27 Jan 2018
"Sub-Riemannian Geometry Harmonic Analysis, PDE and Application"
Bologna (BO), Italy
Organized by Dept. of Mathematics– University of Bologna

PUBBLICATIONS

BOOK CHAPTER (ACCEPTED)
2021
Diomedi, S., Vaccari, F.E., Hadjidimitrakis, K., Fattori, P.
Using HMM to model neural dynamics and decode useful signals for neuroprosthetic control
Hidden Markov Models and Applications Book, **Ed. Springer**

PEER REVIEWED PAPER
Jul 2021
Diomedi, S., Vaccari, F.E., Galletti, C., Hadjidimitrakis, K., Fattori, P.
Motor-like neural dynamics in two parietal areas during arm reaching
Progress in Neurobiology, 205,102116.
https://doi.org/10.1016/j.pneurobio.2021.102116

PEER REVIEWED PAPER
Jun 2021

Vaccari, F.E., **Diomedi, S.**, Filippini, M., Galletti, C., Fattori, P.
A Poisson generalized linear model application to disentangle the effects of various parameters on neurophysiological discharges
STAR Protocols, 2(2), 100413. https://doi.org/10.1016/j.xpro.2021.100413

PEER REVIEWED PAPER
May 2021

Gamberini, M., Passarelli, L., Impieri, D., Montanari, G., **Diomedi, S.**, Worthy, K. H., Burman, K. J., Reser, D. H., Fattori, P., Galletti, C., Bakola, S., Rosa, M. G. P.
Claustral Input to the Macaque Medial Posterior Parietal Cortex (Superior Parietal Lobule and Adjacent Areas)
Cerebral Cortex, bhab108. https://doi.org/10.1093/cercor/bhab108

PEER REVIEWED PAPER
Oct 2021

Diomedi, S., Vaccari, F.E., Filippini, M., Fattori, P., Galletti, C.
Mixed Selectivity in Macaque Medial Parietal Cortex during Eye Hand Reaching
IScience, 23(10), 101616. https://doi.org/10.1016/j.isci.2020.101616

SCIENTIFIC ABSTRACTS

Nov 2021

Diomedi, S., Vaccari, F.E., Galletti, C., Hadjidimitrakis, K., Fattori, P.
"Evidence for motor-related neural states in posterior parietal cortex"
50 th Annual meeting ofSociety for Neuroscience (Chicago, IL, US)

Nov 2021

Vaccari, F.E., Diomedi, S., Gamberini, M., Filippini, M., Fattori, P.
"Simultaneous decoding of reaching goals and task phases from medial parietal areas using a Hidden Markov Model"
50 th Annual meeting ofSociety for Neuroscience (Chicago, IL, US)

Jul 2021

Vaccari, F.E., Diomedi, S., Filippini, M., Fattori, P., Galletti, C.
"Mixed selectivity in macaque parietal cortex during arm reaching movements"
14 th Annual Meeting of Young Researchers in Physiology (Bertinoro, Italy)

May 2021

Vaccari F.E., Diomedi, S., Filippini M., Fattori P., Galletti C.
"Mixed selectivity in macaque medial parietal cortex for gaze and motor parameters"
Annual congress of Vision Sciences Society (Online)

May 2021

Gamberini, M., Passarelli, L., Impieri, D., Montanari, G., Diomedi, S., Worthy, K. H., Burman, K. J., Reser, D. H., Fattori, P., Bakola, S., Rosa, M. G. P., Galletti, C.
"Differential visuomotor and somatosensory claustral inputs to macaque medial posterior parietal cortex"
Annual congress of Vision Sciences Society (Online)

SCIENTIFIC PRESENTATIONS

23 Set 2021
TALK

Diomedi, S., Vaccari, F.E.
"Neural dynamics in parietal areas during arm reaching"
MAIA project consortium meeting (Bologna, Italy)

Jul 2021
TALK

Diomedi, S., Vaccari, F.E., Hadjidimitrakis, K., Galletti, C., Fattori, P.
"Neural States in posterior parietal cortex during arm control"
14 th Annual Meeting of Young Researchers in Physiology (Bertinoro, Italy)
Organized by Società Italiana di Fisiologia.

May 2021
POSTER

Diomedi, S., Vaccari, F.E., Galletti, C., Fattori, P.
"How visual feedback influences neural dynamics in macaque medial posterior parietal cortex"
Annual congress of Vision Sciences Society (Online)

Sept 2019
POSTER

Diomedi, S., Filippini, M., Breveglieri, R., Fattori, P.
"Neural States in V6A during a reaching task"
Joint meeting of Federation of European Physiological Societies and the Italian Physiological Society (Bologna, Italy)

Jun 2019
POSTER

Diomedi, S., Filippini, M., Breveglieri, R., Fattori, P.
"A Hidden Markov Model to decode cognitive states from V6A neural activity during a reaching task"
Summer School "Brain reading and writing new perspectives of neurotechnology" Organized by Federation of European Neuroscience Societies (FENS) (Bertinoro, Italy)

REFEREE IN SCIENTIFIC JOURNALS

2021 Scientific Report - Nature

PARTECIPATION IN SCIENTIFIC PROJECTS

INTERNATIONAL PROJECT
2021-2024

"MAIA: Multifuncional and Adaptive Interactive Artificial intelligence"
H2020-EIC-FETPROACT-2019-951910

NATIONAL PROJECT
2018-2019

"Sviluppo di interfacce cervello-macchina per migliorare le condizioni di vita di pazienticon deficit neurologici"
Bando Ricerca 2018/0373 - Fondazione Cassa di Risparmio in Bologna (Italy)

NATIONAL PROJECT
2019-2022

"PACE: Performing Actions in a Changing Environment"
PRIN2017-2017KZNZLN - Ministero dell'Università e della Ricerca (MIUR, Italy)

INTERNATIONAL PROJECT
2017-2020

"PLATIPUS: PLAsticiTY of Perceptual space Under Sensorimotor interactions"
EU H2020-MSCA-RISE-2016 734227 Platypus

TEACHING ACTIVITY AND SCIENCE DISSEMINATION

LESSON
09 Dec 2021
Degree programme
Course

Hidden Markov Model in Neuroscience
University of Bologna – Alma Mater Sudiorum – Cesena Campus
First cycle degree programme (L) in Biomedical Engineering
05181 - Physiology

LESSON
01 Dec 2021
Degree programme
Course

Neural states in parietal areas during arm reaching
University of Bologna – Alma Mater Studiorum
Second cycle degree program (LM) in Pahrmaceutical Biotechnology
90923 - Neurobiotechnology

LESSON
03 Nov 2021
Degree programme
Course

How to track muscle activity and the kinematics of body parts
University of Bologna – Alma Mater Studiorum
Single cycle degree programme (LMCU) in Medicine and Surgery
Physiology of musculoskeletal system

THESIS CO-SUPERVISOR

Supervision of experimental thesis in Biotechnology (Miriana Ghirelli)

2021	University of Bologna – Alma Mater Studiorum
ACADEMIC TUTOR 2020/2021-2019/2020-2018/2019	Course "Numerical Computing" Bachelor degree in Mathematics, University of Bologna – Alma Mater Studiorum
WEBINAR 15 Dec 2020	"Mixed Selectivity in Macaque Medial Parietal Cortex during Eye-Hand Reaching" Dept. of Mathematics, University of Bologna – Alma Mater Studiorum
SEMINAR 8 Feb 2019	"Hidden Markov Model" Neurophysiology of the visuomotor system Laboratory, Dept. of Biomedical and Neuromotor Sciences, University of Bologna – Alma Mater Studiorum
SCIENCE DISSEMINATION Sept. 2021,2020,2019, 2018	"Notte europea dei Ricercatori" Bologna (Italy)

DATA MINING AND COMPUTER SKILLS

PROGRAMMING LANGUAGE	MATLAB, Python, C/C++, CoCoA/Singular, OpenGL
SOFTWARES	Deeplabcut , FreeSurfer, Blender
ALGORITHMS AND MODELS	Generalized linear model, Hidden Markov Models, Neural Networks, Self Organizazion Maps, Singular Value Decomposition, Principal Components Analysis, LASSO regression analysis
COURSES	Numerical Computing – 9 CFU Algorithms of the Theory of Numbers and Cryptography - 6 CFU Bachelor's degree in Mathematics - University of Bologna Algebra and Geometry for applications – 6 CFU Numerical Analysis - 6 CFU Numerical Analysis and Scientific Software - 6 CFU Computer Graphics - 6 CFU Numerical Methods - 6 CFU Information theory and Complexity - 6 CFU Master degree in Applied Mathematics - University of Bologna Programming - 12 CFU Bachelor degree in Computer Science - University of Bologna Machine Learning – 16 CFU Master degree in Computer Science - University of Bologna Statistical Models and Applications - 10 CFU Master degree in Statistical Science - University of Bologna

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