

Daniela De Luca

Education

October 2020 – Present

PhD program in BioRobotics

Sant'Anna School of Advanced Studies, The BioRobotics Institute, Pisa (PI), Italy

Supervisor: Prof. Silvestro Micera

Tutors: Dr. Sara Moccia, Dr. Jacopo Carpaneto

- PhD project: intraneural optic nerve stimulation for vision restoration

18 – 22 July 2022

8th International Summer School of Neuroengineering “Massimo Grattarola”

University of Genova, Italy

October 2017 – April 2020

MSc in Bionics Engineering

University of Pisa and Sant'Anna School of Advanced Studies, Pisa (PI), Italy

- Master Thesis: Restoring autonomic cardiovascular control in heart transplant recipients: a model-based approach

(NeuHeart Project <https://cordis.europa.eu/project/id/824071>)

Supervisors: Prof. Silvestro Micera, Prof. Francesco Moscato

- Grade: 110/110 cum laude

2019

Percorso formativo 24 CFU

University of Pisa (PI), Italy

Acquisition of 24 ECTS in anthropo-psycho-pedagogical disciplines and teaching methodologies and technologies.

October 2014 – October 2017

BSc in Biomedical Engineering

University of Pisa (PI), Italy

- Thesis: Sensors integrated on flexible support for gait analysis. Realization of a sensorized insole prototype.

Supervisor: Prof. Alessandro Tognetti

- Grade: 105/110

2014

High School Diploma

Liceo Scientifico A. Pacinotti, La Spezia (SP), Italy

- Grade: 100/100

Abroad study and experiences

May 2021 – Jul 2021

Visiting student @ École Polytechnique Fédérale de Lausanne

Country: Switzerland | Language: English | Duration: 3 months

Campus Biotech @Geneva, Laboratory of Neuroengineering

Supervisor: Prof. Diego Ghezzi

Sep 2019 – Jan 2020

Erasmus+ Program

Country: Austria | Language: English | Duration: 5 months

Medical University of Vienna, Center for Medical Physics and Biomedical Engineering

Master Thesis

Supervisor: Prof. Francesco Moscato

Publications

Journal papers

De Luca, D., Moccia, S., Lupori, L., Mazziotti, R., Pizzorusso, T., & Micera, S. (2023). Predicting visual stimuli from cortical response recorded with wide-field imaging in a mouse. *IEEE Sensors Journal*. Under revision.

De Luca, D., Moccia, S., Lupori, L., Mazziotti, R., Pizzorusso, T., & Micera, S. (2023). Convolutional neural network classifies visual stimuli from cortical response recorded with wide-field imaging in mice. *Journal of Neural Engineering*. <https://doi.org/10.1088/1741-2552/acc2e7>

Cesini, I., Spigler, G., Prasanna, S., D'abbraccio, J., **De Luca, D.**, Dell'Agnello, F., ... & Oddo, C. M. (2020). Assessment of intuitiveness and comfort of wearable haptic feedback strategies for assisting level and stair walking. *Electronics*, 9(10), 1676. <https://doi.org/10.3390/electronics9101676>

Haberbusch, M., **De Luca, D.**, & Moscato, F. (2020). Changes in resting and exercise hemodynamics early after heart transplantation: A simulation perspective. *Frontiers in Physiology*, 11, 579449. <https://doi.org/10.3389/fphys.2020.579449>

Conference proceedings

De Luca, D., Moccia, S., Mazziotti, R., Lupori, L., Pizzorusso, T., & Micera, S., "Machine learning-based classification of cortical response to visual stimuli recorded with an ECoG array in mice: a case study." *Proceedings of the VIII Congress of the Italian National Bioengineering Group (GNB)*. 2023.

De Luca, D., Moccia, S., Lupori, L., Mazziotti, R., Pizzorusso, T., & Micera, S. (2022, October). Predicting visual stimuli from cortical response recorded with widefield imaging in a mouse. In *2022 IEEE Sensors* (pp. 01-04). IEEE. <https://doi.org/10.1109/SENSOR52175.2022.9967250>

De Luca, D., Moccia, S., & Micera, S. (2022, March). Deploying an Instance Segmentation Algorithm to Implement Social Distancing for Prosthetic Vision. In *2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops)* (pp. 735-740). IEEE. <https://doi.org/10.1109/PerComWorkshops53856.2022.9767213>

Strauss, I., **De Luca, D.**, Panarese, A. M., Bernini, F., Gabisonia, K., Petrini, F. M., ... & Micera, S. (2021, May). A Software Tool for the Real-Time in Vivo Evaluation of Neural Electrodes' Selectivity. In *2021 10th International IEEE/EMBS Conference on Neural Engineering (NER)* (pp. 112-115). IEEE. <https://doi.org/10.1109/NER49283.2021.9441334>

Conference abstracts

De Luca, D., Moccia, S., Mazziotti, R., Lupori, L., Pizzorusso, T., & Micera, S. (2023), Machine learning-based decoding of visual cortex response recorded with ECoG in a mouse [Poster]. 11th International IEEE EMBS Conference on Neural Engineering, April 25-27, 2023, Baltimore, MD, USA.

De Luca, D., Moccia, S., Lupori, L., Mazziotti, R., Pizzorusso, T., & Micera, S. (2022), CNN classifies visual stimuli from primary visual cortex in a mouse [Poster]. FENS Forum 2022, 9-13 July, Paris, France.

De Luca, D., Strauss, I., & Micera, S. (2021), A software tool for assessing autonomic functions during thoracic vagus nerve stimulation [Poster] 10th International IEEE EMBS Conference on Neural Engineering, 4-6 May 2021, Virtual.

Involvement in other projects

NeuHeart project

<https://cordis.europa.eu/project/id/824071>

Development of a numerical model (in MATLAB and Simulink environment) of the sympatho-vagal control of the healthy and transplanted heart.

Involved as Master Thesis student

MOTU project <https://www.santannapisa.it/en/institute/biorobotics/motu>
Writing experimental protocols and conducting experiments on healthy subjects to test the use of a wearable haptic feedback system for assisting lower-limb amputees.
Involved as Master student

University projects and activities

- Design and development of a ChatBot assistant for an Industrial IOT asset monitoring platform. Programmed (in Python) in the Amazon Web Services environment and integrated on the Slack messaging platform.
- Haptic stimulators for referred phantom fingers: 5 servomotors steered by 5 force sensing resistors. PIC18F4431 microcontroller programmed in C language, on MPLABxIDE software.
- Tissue engineering laboratory: mechanical and electrical characterization of materials.
- Development of a Neuro-Fuzzy system for color comparison (Deep Learning Toolbox, MATLAB).

Technical skills

- Knowledge of MATLAB and Simulink (MathWorks, US)
- Knowledge of Python
- Knowledge of COMSOL
- Familiar with neurophysiology workstation WS8, Tucker-Davis Technologies
- Knowledge of ANSYS
- Basic knowledge of LabVIEW (National Instruments)
- Experience with Amazon AWS
- Experience with Weka
- Experience with microcontrollers PIC18F4431 (Microchip) and Arduino
- Knowledge of Microsoft Office
- Competent with Windows OS
- Competent with LaTeX

Other skills

Soft skills

- Experience in cooperation and confrontation with both physicians and technical staff.
- Good problem-solving skills
- Ability to work individually as well as in a team
- Positive attitude

Languages

- Italian: mother tongue
- English : Read, Write, Speak (C1 level)

Academic achievements

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| 2019 | • Winner of the Erasmus+ scholarship, mobility for traineeship, a.y. 2019/2020 |
| 2017 | • Winner of the competition for admission to the MSc program in Bionics Engineering (3rd edition), jointly offered by University of Pisa and Sant'Anna School of Advanced Studies |

Certifications

Jun 2017

"Certificate of Advanced English" (CAE)

- Grade: B (198/210)

Jun 2013

First Certificate in English" (FCE)

- Grade: A

Additional Information

September 13 – 14 2022

Contribution to Workshop on Artificial Intelligence and Smart Materials Systems
Department of Excellence on Robotics and AI, Sant'Anna School of Advanced Studies,
Pisa, Italy

April 7 2022

Invited talk to PhD Day in Neuroscience @Scuola Normale Superiore, Pisa, Italy

Driving licence

- B (14/04/2014)