



Flavia Paggetti

ABOUT ME

I'm currently a PhD student at the Biorobotics Institute, working in the Artificial Hands Area. I'm a highly motivated person, eager to learn and gain experience in an international research-based environment. During the last two years I have gained experience in developing data acquisition interfaces (C#) and implementing control algorithms for assistive devices. While working for Orthokey company and during my experience abroad, I had the opportunity to define and set up engineering research projects, in the field of assistive and rehabilitation technology. I have a strong passion for new challenges, especially in international and multidisciplinary contexts.

EDUCATION AND TRAINING

PhD student

Scuola Superiore Sant'Anna [01/10/2022 – Current]

City: Pisa

Country: Italy

Field(s) of study: Artificial Hands Area

- Working on upper limb prosthetics and assistive devices
- Development of data acquisition and control interfaces on C#
- Development and testing of control algorithms for human-machine interfaces, in particular for myokinetic interfaces (<http://www.mykierc.eu/>)
- Data acquisition and data storage (Python, Matlab)

Master of Science in Bionics Engineering

Scuola Superiore Sant'Anna (SSSA) [08/2019 – 10/2021]

Address: Piazza Martiri della Libertà, 33, 56127 Pisa (Italy)

Website: <https://www.santannapisa.it/it/istituto/biorobotica/biorobotics-institute>

Final grade: 110L

Type of credits: ECTS – Number of credits: 120

Thesis: Finite element model of forearm muscle for a myokinetic interface

Master of science focusing on data mining, computational neuroscience, artificial limbs and assistive robotics.

Main subjects covered and projects developed:

- control and design of upper and lower limb prostheses and exoskeletons
- programming in C, C++ and Python in the framework of robot controllers
- application of machine learning algorithms for upper limb prosthesis control and clinical outcome prediction
- Non linear FEM analysis

Master thesis focusing on the development of a forearm muscle model to support the implementation of a human-machine interface. Application of non linear FEM analysis for muscle simulations, analysis of signals from EMG sensors and force transducers.

Acquaintance with magnetic field models and magnet localization algorithms.

4th Connected Health Summer School on Smart Homes for Healthy Ageing - Conference participant

Ulster University [05/2019 – 06/2019]

Field(s) of study: Information and Communication Technologies

Type of credits: ECTS – Number of credits: 2.5

4th Connected Health Summer School on Smart Homes for Healthy Ageing

- Data collection, processing, visualization and interpretation of data that can be collected within a Smart Home.
- Group project focused on the real needs of people living with dementia.

Erasmus Scholarship

Tampere University of Technology (Now:Tampere University) [07/2018 – 12/2018]

Address: Kalevantie 4, 33100 Tampere (Finland)

Website: <https://www.tuni.fi/en>

Bachelor's Degree in Mechanical Engineering

Università degli studi di Firenze [08/2016 – 09/2019]

Final grade: 110

Type of credits: ECTS – Number of credits: 180

Thesis: Mechanical characterization of soft gels used to mimic pancreatic tissue

Minor in Biomedical Engineering, focusing on Tissue Engineering, Microsystem Technology, Biomaterials and Medical Imaging Methods.

Definition of a personal research project, with specific targets and analysis set up, consulting and comparing previous results found in literature.

WORK EXPERIENCE

Research fellowship

Artificial Hands Area, Biorobotics Institute of Scuola Superiore Sant'Anna [14/11/2021 – 30/09/2022]

City: Pontedera

Country: Italy

- Support of the implementation of the myokinetic control interface for hand prostheses: finite element simulations (Comsol) of muscle contraction, development of computational algorithms for magnet placement and outcome assessment.
- Mechanical testing of wrist prosthesis, improvement of the current design and acquisition and analysis of IMU signals.

Intern

Katholieke Universiteit Leuven [26/07/2020 – 27/09/2020]

Address: Oude Markt 13 Oude Markt 13, 3000 Leuven (Belgium)

Website: <https://www.kuleuven.be/kuleuven/>

Name of unit or department: Robotic-Assisted Surgery

Design, development and test of anchoring mechanism for cardiac catheter.

Analysis of clinical need, literature review, requirements evaluation and assessment.

CAD design, development and testing of anchoring device.

Analysis and testing of Shape Memory Alloy actuation technology.

Technical Expert - Intern

Orthokey [01/2019 – 08/2019]

Address: Piazza Puccini 26 , 50144 Firenze (Italy)

Website: <http://www.orthokey.com/>

Business or sector: Professional, scientific and technical activities

Data and program analysis of a smart cutting guide for total knee arthroplasty.
Literature Review and outcome assessment.
Cadaver lab analysis with object-oriented Python and processing of IMU signals.
Investigating ways to improve computer-assisted surgery techniques.

PUBLICATIONS

To what extent implanting single vs pairs of magnets per muscle affect the localization accuracy of the myokinetic control interface? Evidence from a simulated environment

[2022]

The MyoKinetic prosthetic hand: Implanted magnets restore grasping in humans with upper limb amputation

[2023]

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

Spanish

LISTENING C2 READING C2 WRITING C1

LISTENING B1 READING B2 WRITING B1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1 SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Programming in C# / MatlabSIMULINK / NI LabView / Utente Intermedio/Avanzato di software per l'analisi agli elementi finiti (CATIA, ANSYS, COMSOL) / Programming: C, C++, Python / Microsoft Office (Microsoft Word Microsoft Excel Microsoft PowerPoint Microsoft Visio) / Creo/Solidworks