



Angelo Catalano

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Gender: Male | **Date of birth:** Jul 9 2000 | **Nationality:** Italy

WORK EXPERIENCE

[01/2024 - 10/2024]

Fellow Researcher

Italian Institute of Technology - GENOVA (GE) Italy

Company sector: R&D and patents

Business or sector: biomedical

Main activities and responsibilities: As a fellow researcher at the Soft Robotics for Human Cooperation and Rehabilitation laboratory led by Prof. Bicchi, my main activities and responsibilities include assessing the state of the art in the field of prosthetic robotic hands, and designing and developing new proposals to improve the functionality and efficiency of prosthetic robotic hands. I collaborate with a multidisciplinary team to design, develop, and test prototypes. In addition, I present research results at internal and external conferences and am involved in writing scientific articles for peer-reviewed journals.

Acquired skills and achieved objectives: During this experience, I am acquiring significant skills in evaluating the state of the art, synthesis, and analysis, including targeted research and the study of research and articles present in the literature. Additionally, I am improving my ability to synthesize all the discoveries made through the evaluation of the state of the art into concise and effective presentations.

[09/2023 - 05/2024]

Graduate Student Researcher

Dynamical System Laboratory - NEW YORK (NY) United States of America

Company sector: Engineering and design

Business or sector: biomedical

Main activities and responsibilities: Joining Prof. Porfiri's lab during my master's program at NYU marked a turning point. During my assignment as a graduate researcher at the Dynamical System Laboratory, I had the opportunity to combine robotics, mechanics and human interaction. Specifically, my work involved improving the wrist rehabilitation of stroke patients using haptic robots and wearable sensors. Through my role as a researcher, I was able to improve my research and technical skills, as well as have the responsibility of reporting to a professor and meeting strict deadlines.

Acquired skills and achieved objectives: My work at the lab has enabled me to gain in-depth skills in several key areas. I developed a solid understanding of sensors, general biomedicine, and rehabilitation. I have acquired considerable skills in Python, machine learning, and supervised learning algorithms. In addition, I have deepened my understanding of the scientific research and inquiry process.

My research experience resulted in a publication for a SPIE conference of Soft Mechatronics and Wearable Systems. In addition to the publication, the research served as my master's thesis at NYU and led to numerous presentations at conferences and symposia within the university itself, where I learned how to expound my research and discuss it with professors and experts in the field.

[07/2022 - 08/2023]

Division Leader - Steering System

Poliba Corse (Politecnico di Bari), Via Giovanni Amendola - BARI (BA) Italy

Company sector: Engineering and design

Main activities and responsibilities: As the Steering System Division Leader at Poliba Corse, I successfully led the FSAE (Formula SAE) team at Politecnico di Bari in the design and development of our competition car's steering system. This experience allowed me to acquire leadership, team management, and applied engineering skills in a highly competitive environment. I made significant contributions to the team's success through my leadership and dedication to achieving set goals.

Acquired skills and achieved objectives: As a Division Leader, I have gained valuable skills and knowledge that have contributed significantly to my personal and professional development:

1. **Technical Skills:** This experience deepened my technical knowledge in the field of automotive engineering, particularly in the design and optimization of steering systems. I learned to apply theoretical concepts to concrete projects, improving my problem-solving skills.
2. **Leadership and Teamwork:** Leading the steering system division allowed me to develop strong

leadership skills. I learned how to motivate and guide team members, assign tasks effectively, and foster a collaborative and innovative team environment. Collaboration in a multidisciplinary team was critical to achieving our common goal.

3. Problem Solving: Working on a competitive project like FSAE, complex engineering problems often arose. I became adept at identifying issues, analyzing their root causes, and implementing effective solutions under pressure.

4. Project Management: Coordinating the development of the steering system involved project management skills, from budget estimation and resource allocation to risk analysis and meeting deadlines.

[02/2023 - 06/2023]

Graduate Internship

BionIT Labs - SOLETO (LE) Italy

Company sector: Engineering and design

Business or sector: biomedical

Main activities and responsibilities: During my collaboration with BionIT Labs, I carried out several activities. The main tasks and activities include:

1) DC Motor Design: I actively participated in the design of the DC motor used in the Adam's Hand robotic hand prosthesis. This involved the selection of components, the definition of performance specifications and the realization of electrical diagrams.

2) Simulations, Testing and Analysis: I conducted in-depth simulations to evaluate the behavior of the DC motor under various operating conditions. These simulations were fundamental to optimize the design and ensure the proper functioning of the prosthesis.

3) Documentation and Reporting: I have drawn up detailed technical reports on the activities carried out, the results obtained and the recommendations for the improvement of the design of the DC motor.

Acquired skills and achieved objectives: My experience working with BionIT Labs has been a very valuable learning opportunity. It has helped develop a number of important skills that I have been able to apply and deepen in my recent research activities.

1. Advanced Technical Skills: I gained advanced technical skills in DC motor design and simulation, as well as in medical robotics and biomechanics. This experience has provided me with a solid foundation to tackle complex technical challenges in the future, skills that I use daily in the design and development of prosthetic robotic hands at IIT.

2. Time Management: Time management was crucial during this experience, as I had to balance my academic commitment with work at the company. I learned to carefully plan my activities to maximize productivity and meet deadlines. This skill is critical in my current role, where I have to coordinate various research projects and meet deadlines.

3. Ethical Sensitivity: Dealing with medical devices for amputees, I have developed a heightened sensitivity to the ethical implications and regulatory requirements associated with the design and manufacture of health technologies. This awareness is essential in my current work, where the design of robotic prosthetic hands requires special attention to the needs and well-being of patients.

[09/2019 - 11/2022]

Soccer Referee

Federazione Italiana Giuoco Calcio (FIGC) - BARI (BA) Italy

Main activities and responsibilities: Throughout my career, I have served as a referee in both men's and women's soccer matches, ensuring that all safety rules and guidelines were fully respected. I inspected the playing field before each match and resolved any conflicts between players and/or coaches.

Additionally, I performed various data entry tasks and worked closely with other referees. I built and maintained positive relationships, trained and coordinated new employees to ensure the highest standards were met. I provided helpful advice and knowledge to coaches and players on all rules and regulations.

Acquired skills and achieved objectives: Experienced and detail-oriented soccer referee capable of maintaining a safe environment for both players and observers, inspecting the playing field, and instructing players and coaches on various rules and regulations. Possesses a highly professional attitude, significant ability to work well under pressure, excellent decision-making skills, and a deep passion for soccer.

[09/2021 - 07/2022]

Undergraduate Internship

Poliba Corse, Edoardo Orabona, 4 - BARI (BA) Italy

Company sector: Engineering and design

Main activities and responsibilities: In 2022, I was responsible for designing and assembling the braking system of our race car. This commitment required considerable effort and dedication, but it bore fruit when we competed at both Varano de' Melegari and Hockenheim.

In 2023, I took on a larger role and was responsible for designing and assembling the steering system of our new car. This experience allowed me to gain a deeper understanding of vehicle dynamics and further

refine my mechanical engineering skills.

Acquired skills and achieved objectives: Functional design of a braking system, fem analysis and loading of loading on the car, design and 3D model creation

[03/2017 - 04/2017]

Computer games, multimedia and software specialised seller

British Red Cross Shop, 69-71 Old Church St - LONDRA United Kingdom

Company sector: Marketing

Main activities and responsibilities: Sales clerk in the computer and music department (CDs and vinyls) of the British Red Cross Charity Shop in London.

- Provided customer service and assistance in the computer department.

- Actively contributed to fundraising efforts for the British Red Cross.

- Collaborated with the team to maintain order and manage inventory.

Acquired skills and achieved objectives: This experience taught me many skills and contributed to my professional development in several ways:

1) Technical Skills: Working in the IT department, I gained practical skills in managing and supporting IT products. This included understanding the different types of hardware and software, solving technical problems, and assisting customers in purchasing and using computer devices.

2) Sales and Customer Service: In the CD and vinyl sales department, I developed sales skills and learned to understand customer preferences to recommend relevant products. I also honed my customer service skills, ensuring a positive experience for buyers and addressing their questions and concerns.

3) Contributing to Charitable Causes: Being a British Red Cross Charity Shop, I learned the importance of social responsibility companies and volunteers. I have had the opportunity to actively contribute to fundraising for a worthy cause, developing a sense of personal satisfaction in being part of a charity.

EDUCATION AND TRAINING

[2024 - present]

PhD in Autonomous Systems

Politecnico di BARI

Town: BARI

EQF level: 8

NQF level: Doctor of Philosophy (Ph.D.)

[2022 - 2024]

Mechanical Engineering

Politecnico di BARI

Town: BARI

2nd level degree in Mechanical engineering

Final degree mark: 110/110 cum laude

EQF level: 7

NQF level: 2nd cycle degree/Master of Science (2 years)

[2023 - 2024]

Mechatronics and Robotics Engineering

New York University

Town: United States of America

EQF level: 7

NQF level: 2nd cycle degree - Master

Dissertation/thesis title: Automating the Assessment of Wrist Motion in Telerehabilitation with Haptic Devices

[2018 - 2022]

INGEGNERIA MECCANICA

Politecnico di BARI

Town: BARI

1st level degree in Ingegneria industriale

Final degree mark: 103/110

EQF level: 6

NQF level: 1st cycle degree/Bachelor (3 years)

Dissertation/thesis title: STUDIO DEL COMPORTAMENTO DINAMICO DI UNA VETTURA FORMULA STUDENT IN FRENATURA E PROGETTAZIONE FUNZIONALE DELL'IMPIANTO FRENANTE

PRE-UNIVERSITY STUDIES

[2018]

Secondary school diploma: Classical High School
Italian secondary school diploma

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s)

English

LISTENING: C1 READING: C1 WRITING: C1
SPOKEN INTERACTION: C1 SPOKEN PRODUCTION: C1

French

LISTENING: B1 READING: B1 WRITING: A2
SPOKEN INTERACTION: A2 SPOKEN PRODUCTION: A2

Diploma(s) or certificate(s)

English: Cambridge 'First' Certificate - Cambridge, 06 2018 - European level: B2
English: English proficiency certificate - Duolingo English Test, 23 03 2023 - European level: C1
English: International English Language Testing System (IELTS) - British Council and Cambridge University Press & Assessment., 15 05 2023 - European level: C1
Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user
Common European Framework of Reference for Languages

ACADEMIC STUDIES IN FOREIGN COUNTRIES

Other experience acknowledged by the course of study

Formula Student Germany

Language: English

Duration of studies in months: 1

Foreign country where the academic studies were carried out: Hockenheim (Germany)

Description: I participated in the Formula Student competition in Germany with a multidisciplinary team of students. Our goal was to design, build, and test an electric race car. During the competition, I contributed to solving technical issues and participated in presentation and judging sessions. This experience allowed me to develop problem-solving skills, teamwork, time management, as well as learn to work in a highly competitive environment and adapt quickly to changes.

OTHER SKILLS

Communication skills

Team Spirit: Ability to work effectively within a team.

Multicultural Communication: Experience in international environments requiring cross-cultural adaptability and understanding.

Leadership in Conferences: Ability to lead and manage discussions at professional events.

Organisational / managerial skills

Gestione di Progetti: Esperienza nella conduzione di ricerche e progetti, con un focus su risultati e obiettivi.

Leadership di Team: Responsabile di un team, con un forte senso dell'organizzazione.

Job-related skills

Project Management: Experience in leading research and projects, with a focus on results and objectives.

Team Leadership: Responsible for a team, with a strong sense of organization.

DIGITAL COMPETENCES

| SELF-ASSESSMENT | | | | |
|-------------------------------|---------------------------------|--------------------------|------------------|------------------|
| INFORMATION AND DATA LITERACY | COMMUNICATION AND COLLABORATION | DIGITAL CONTENT CREATION | SAFETY | PROBLEM SOLVING |
| Independent user | Independent user | Independent user | Independent user | Independent user |

Digital competences - Self-assessment grid

ECDL Profile:

ECDL (European Computer Driving License) is a certificate of computer competence that demonstrates the ability to use information and communication technologies (ICT) effectively and productively. The ECDL Profile certificate attests to advanced skills in several areas, including data management, advanced spreadsheet usage, multimedia presentation, email communication, and advanced web usage. - AICA, 2017

Basic digital competence:

OFFICE AUTOMATION

Office Suite: (Highly Specialised) | **Presentation Software:** (Highly Specialised) | **Spreadsheets:** (Highly Specialised) | **Web Browser:** (Highly Specialised) | **Word Processors:** (Highly Specialised)

APPLICATION SOFTWARE

CAD - Assisted Design: AutoCAD (Advanced) , Creo (Advanced) , Inventor (Advanced) , SolidWorks (Advanced) | **CAM Software:** Adams View (Advanced)

COMPUTER PROGRAMMING

Markup languages: LaTeX (Advanced) | **Programming languages:** Arduino (Advanced) , Matlab (Advanced) , Python (Foundation)

PUBLICATIONS

Journal articles "Automating the assessment of wrist motion in telerehabilitation with haptic devices" ; Roni Barak Ventura, Angelo Catalano, Rayan Succar, Maurizio Porfiri ; Smart Structures + Nondestructive Evaluation ; SPIE (2024)
doi.org/10.1117/12.3010545