Tommaso Fiumalbi



About me:

I am a versatile and motivated engineer with skills and experience of five years in the design and validation of robotic platforms. I work in wearable robotics, focusing mainly on the mechanical development of exoskeletons and robotic prostheses for lower limbs, with two patents and three publications in scientific journals. Over the years, I have developed good problem-solving skills through participation in six research projects (two European and four national). I have developed good communication skills through presentations at project review meetings.

• WORK EXPERIENCE

2017 – CURRENT – Pisa, Italy **MECHANICAL ENGINEER –** SANT'ANNA SCHOOL OF ADVANCED STUDIES, THE BIOROBOTIC INSTITUTE

2017 – 2018 – Italy VIDEO AND MOTION PICTURE EDITOR – ISD ENGINEERING

Edited descriptive audio video lessons of Solidworks Professional

2016 – 2017 – Marlia, Lucca, Italy **MECHANICAL ENGINEER –** C.R.C SRL

Designed innovative machines for a wide range of sector such as paper converting, pharma, packaging and OilGas companies

taken to account Machinery Directive (2006/42/EC)

- · Feasibility studies on customers requirements
- Managed technical documentation for marketing, such as manuals and exploded drawings

Basics of Intellectual Property

04/2016 – 07/2016 – Pontedera, Italy INTERNSHIP - MECHANICAL ENGINEER – COSTRUZIONI NOVICROM SRL

Analysis of the production cycles of aerospace components

• Development of novel production cycle for a group of components

- Standardization of process and equipment
- Tool paths programming with CAD/CAM software

EDUCATION AND TRAINING

2018 – 2022 – Pisa, Italy PHD IN BIOROBOTICS – The Biorobotic Institute, Sant'Anna School of Advanced Studies

2013 – 2016 – Pisa, Italy MSC MECHANICAL EGINEER – University of Pisa

2009 – 2013 – Pisa, Italy BSC MECHANICAL ENGINEER – University of Pisa

2017 – Italy INDUSTRIAL ENGINEER (LM-33)

LANGUAGE SKILLS

Mother tongue(s): ITALIAN

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1

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

DIGITAL SKILLS

My Digital Skills

Design

ANSYS (Professional Proficiency) | Utilizzo software di slicing 3D (Cura, ideaMaker, Prusa Slicer) | Solidwor ks (Professional Proficiency) | Autodesk AutoCAD (Optimal Knowledge) | CAM Programming | PTC CREO (Professional Proficiency)

Workart

Lightroom & Lightroom Classic | Photoshop (Proficient) | Adobe Premiere (VIDEO)

Data analysis

Microsoft Excel | MatLab (good knowledge)

Wording & Presentation

Microsoft Office | Microsoft Word | Microsoft Powerpoint | Visio Microsoft | Outlook | Buona conoscenza di Beamer per le presentazioni | Good knowledge of Latex

PUBLICATIONS

Pressure-Sensitive Insoles for Real-Time Gait- Related Applications

https://www.mdpi.com/1424-8220/20/5/1448 - 2020

A Multimodal Sensory Apparatus for Robotic Prosthetic Feet Combining Optoelectronic Pressure Transducers and IMU

https://www.mdpi.com/1424-8220/22/5/1731 - 2022

A Model-Based Framework for the Selection of Mechatronic Components of Wearable Robots: Preliminary Design of an Active Ankle-Foot Prosthesis

https://link.springer.com/chapter/10.1007/978-3-031-08645-8_53 - 2022

DRIVING LICENCE

Driving Licence: B 2018 – 2029

PROJECTS

HABILIS - HABILIS ++

- Oversaw the design and validation process of a novel hand exoskeleton for the rehabilitation of traumatic injures
- Manage technical reports and deliverable of the projects
- Manage the certification process for medical device according to CEE 93/42 e CE 2007/47
- Deal relations with external suppliers and order processing

MOTU - MOTU++

- Oversaw the design and validation process of a novel lower-limb robotic prosthesis
- Manage technical reports and deliverable of the projects
- Manage the certification process for medical device according to CEE 93/42 e CE 2007/47
- Deal relations with external suppliers and order processing

2017 – 2021 CYBERLEGS Plus Plus

http://www.cyberlegs.eu/

- Design and development of instrumented insoles for the measurement of walking parameters
- Manage technical reports and deliverable of the projects
- Manage the certification process for medical device according to CEE 93/42 e CE 2007/47
- Deal relations with external suppliers and order processing

ReHyb

- Supporting the development phase of a fully active exoskeleton for the upper-extremities.
- Manage technical reports and deliverable of the projects
- Manage the certification process for medical device according to CEE 93/42 e CE 2007/47
- Deal relations with external suppliers and order processing

PATENTS

Kinematic chain to assist the flexion-extension of a joint

Baldoni A., Scalamogna A., Fiumalbi T., Crea S., Vitiello N., "Kinematic chain to assist the flexion-extension of a joint". PCT-IB2020-

059049.

https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2021064544

Method for optimising the arrangement of pressure sensors and device obtained by this method

Martini E., Baldoni A., Fiumalbi T., Dell'Agnello F., Crea S., Vitiello N., "Method for optimising the arrangement of pressure sensors and device obtained by this method". PCT-IB2020-060077 https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2020170106

TECHNICAL SKILLS

Design & development

Design: innovative transmission system, actuators, mechanical layout for artificial joints, sensors
Assembling: building of exoskeletons and lower-limb prostheses, bench test setup, moldings
Prototyping: rapid prototyping of physical human-robot interfaces (pHRi) in several materials: PLA, ABS,
Flex Polymeric Materials. Experience in slicing programming and stereo-lithography
Testing: sensors characterization, one-axis platform tests, characterization of actuation units and transmissions

Polymeric laboratory: knowledge in silicone property for the realization of flexible components **Simulation**: structural simulation, motion analysis, parametric optimization, key performance index for the transmission

Data analysis: elaboration of signals from sensors and data acquired from bench tests and tests on subjects

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Pontedera, 21/07/2022

Tommaso Fiumalbi