

Filippo Dell'Agnello

Curriculum Vitae

Work Experience

Research Fellow

Jul 2019 – Now



Senior Electronic R&D Engineer, SCUOLA SUPERIORE SANT'ANNA, BIOROBOTICS INSTITUTE, Pontedera (Italy).

Senior Researcher at Biorobotics Institute, [Wearable Robotics Lab.](#), of Scuola Superiore Sant'Anna. Lead the electronic design and implementation of a new generation wearable devices.

Technical Advisor

Jul 2023 – Jul 2024



Senior Electronic R&D Advisor, IUVO SRL, Pontedera (Italy).

Advisor at [IUVO Srl](#) company, focusing on: i) design of embedded electronic solutions for active and sensorized-passive exoskeletons, including bench testing, ii) supervision of EMC and electrical safety measurements for the certification of wearable devices, iii) monitor and management of electronic R&D processes.

Technical Advisor

Jul 2022 – Dec 2022

Software Development Advisor, TMT, Lucca (Italy).

R&D advisor at TMT about complex and reliable software development. Python reconfigurable back testing platform development for innovative automatic crypto currency trading systems validation.

Technical Advisor

Sept 2018 – Dec 2018



Electronic R&D Advisor, IUVO SRL, Pontedera (Italy).

Advisor at [IUVO Srl](#) company on i) integration of embedded electronic solutions for active and sensorized-passive exoskeletons and ii) certification of biomedical devices class 2A for clinical investigation.

Indipendent Contractor

Jul 2016 – Jul 2019



Electronic Engineer R&D, SCUOLA SUPERIORE SANT'ANNA, BIOROBOTICS INSTITUTE, Pontedera (Italy).

Partnership with the Biorobotics Institute, [Wearable Robotics Lab.](#), of Scuola Superiore Sant'Anna about design and test of mechatronic devices. Cooperation with [IUVO Srl](#).

Non-curricular Internship

Mar 2016 – May 2016



Intern, UNIVERSITY OF PISA, Pisa (Italy).

Internship project entitled "Realization of a Directional Anemometer for the equipment of Unmanned Quadcopter for civil applications". Research and development of MEMS post-processing technique.

Non-curricular Internship

Jan 2016 – Mar 2016



Affiliate, CSAIL-MIT, Boston (MA, USA).

Work on project: "MEMS Sensors for Wind Measurement for UAVs in the Urban Canyon". Permanence period at the [Computer Science Artificial Intelligence \(CSAIL\)](#) laboratory of MIT, for design and integration of MEMS wind sensors on unmanned quadcopters.

Work Projects

Projects Names

HUMAN, CYBERLEGS++, AIDE, CENTAURO, MOTU, RONDA, HABILIS, CONBOTS, ReHyb, BioArm, MARI4YARD, PROMOTE, MOTU++, HABILIS++, DETERMINISTIC6G .

Partners

SINTEF, AIDIMA, AIRBUS, COMAU, HIGHSKILLZ LTD, HOLONIX, IUVO, UPATRAS, ROYO, SUPSI, UCL, VUB, UVL, FDG, ÖSSUR, UMH, UCBM, UPV, UT, CEDAR FOUNDATION, ZED WORLDWIDE, FRAUNHOFER, B&J ADAPTACIONE, RSA, ROGGI, ROBOTECH, PIAGGIO, UNIBO, SSSUP, TECIP, AOUP, CNR, HUMANWARE, WR, INAIL, POLIMI, ICL, UCBM, ARVRTECH, UG, IBM-ISRAEL, TUM, TECNALIA, ICL, IBEC, DTU, STELAR, SCHÖN KLINIK, VALDUCE, TUHH, WEGEMT, NODOSA, GHENOVA, CANONICAL ROBOTS, GIZELIS ROBOTICS, AIMEN, SILICON AUSTRIA LABS, ERICSSON.

Suppliers

ELMO MC, MAXON, GSD, FAULHABER, NATIONAL INSTRUMENTS, WURTH ELEKTRONIK, CADLINE, PHOENIX PCB, DCLManufacturing, PAVESI PCB, OT BioElettronica, FISCHER CONNECTOR, LEMO CONNECTORS, BECKHOFF, ST MICROELECTRONICS, BOSCH SENSORTEC, TEXAS INSTRUMENTS.



Education

- 06 Feb 2023 – 30 Jun 2023 **Fundamentals of Business Administration**,
PFH Private University of Applied Sciences, Göttingen (Germany).
- 09 Mar 2021 – 13 May 2021 **CYB+, Business Management and Entrepreneurial Development**,
University of Pisa, Pisa (Italy).
- 4 Oct 2016 **Italian License for Electronic Engineering**,
Pisa (Italy).
- 05 May 2012 – 27 Nov 2015 **Master's Degree in Electronic Engineering**,
University of Pisa, Pisa (Italy).
- 11 Sept 2008 – 04 May 2012 **Bachelor's Degree in Electronic Engineering**,
University of Pisa, Pisa (Italy).
- 15 Sept 2003 – 08 Jul 2008 **High School Diploma, specialising in Scientific Subjects**,
Institute-Lyceum Scientific XXV Aprile, Pontedera (Italy).

Master Thesis

- Thesis Title *"A Directional MEMS Anemometer for UAV equipment".*
- Supervisors Prof. Paolo Bruschi, Prof. Massimo Piotto
- Description During this thesis project, I developed a miniaturized directional anemometer with good features suitable for unmanned aerial vehicles (UAVs). The proposed innovative architecture converts airflow into pressure differences, which are related to wind velocity and direction. The sensing elements used in the anemometer are MEMS pressure sensors, which were specifically developed for this purpose. The device was simulated using FEM software Comsol Multiphysics and subsequently realized and characterized.

Bachelor Thesis

- Thesis Title *"Basic Structures for Quantum Cryptography".*
- Supervisor Prof. Andrea Nannini
- Description This thesis is a brief investigation into the reliability of current cryptographic systems. It aims to study the principles of quantum physics for enhancing the security of cryptosystems and provides an overview of the state of the art of quantum cryptography hardware.

Educational Projects

- Projects Titles *"A versatile Dynamic Range Audio Compressor";*
"Simulations of MEMS based Piezoresistive Accelerometer";
"Design and Simulation of an Integrated Analog Linear Transconductive Amplifier".

Publications

- Title [Submitted - Under Review] *A Unilateral Active Knee Orthosis Exoskeleton to Assist Individuals with Hemiparesis*,
Transactions on Robotics, IEEE
- Authors S. L. Capitani, E. Peperoni, L. Kuang, T. Fiumalbi, A. Baldoni, F. Dell'Agnello, I. Creatini, E. Taglione, N. Vitiello, E. Trigili, S. Crea
- Title [Accepted for Presentation] *H-PhlEx α : a compact SEA-based hand exoskeleton with active metacarpophalangeal joints*,
BioRob - Heidelberg, IEEE, Sept. 2024
- Authors S. L. Capitani, E. Peperoni, L. Kuang, T. Fiumalbi, A. Baldoni, F. Dell'Agnello, I. Creatini, E. Taglione, N. Vitiello, E. Trigili, S. Crea
- Title [Accepted for Presentation] *A Lightweight Robotic Knee Prosthesis with Torsional Series Elastic Actuation*,
BioRob - Heidelberg, IEEE, Sept. 2024
- Authors I. Fagioli, A. Mazzarini, A. Baldoni, F. Dell'Agnello, E. Gruppioni, E. Trigili, S. Crea, N. Vitiello
- Title [Accepted for Presentation] *A Robotic Ankle-Foot Prosthesis Based on Torsional Series and Parallel Elasticity*,
BioRob - Heidelberg, IEEE, Sept. 2024
- Authors A. Mazzarini, I. Fagioli, A. Baldoni, F. Dell'Agnello, E. Gruppioni, E. Trigili, S. Crea, N. Vitiello
- Title *An Underactuated Active Transfemoral Prosthesis With Series Elastic Actuators Enables Multiple Locomotion Tasks*,
Transactions on Robotics, IEEE, Jun. 2024
- Authors I. Fagioli, F. Lanotte, T. Fiumalbi, A. Baldoni, A. Mazzarini, F. Dell'Agnello, H. Eken, V. Papapicco, T. Ciapetti, A. Maselli, C. Macchi, S. Dalmiani, A. Davalli, E. Gruppioni, E. Trigili, S. Crea, N. Vitiello
- Title *Soft Transfemoral Prosthetic Socket With Sensing and Augmenting Feedback: A Case Study*,
Transactions on Medical Robotics and Bionics, IEEE, Mar. 2024
- Authors L. Paterno, M. Filosa, E. Anselmino, A. Cecere, F. Dell'Agnello, E. Gruppioni, A. Mazzoni, S. Micera, C. M. Oddo, A. Mencassi
- Title *A Self-Aligning Upper-Limb Exoskeleton Preserving Natural Shoulder Movements: Kinematic Compatibility Analysis*,
Transactions on Neural Systems and Rehabilitation Engineering, IEEE, Volume 31, Dec. 2023
- Authors J. Pan, D. Astarita, A. Baldoni, F. Dell'Agnello, S. Crea, N. Vitiello, E. Trigili
- Title *MITEx: A Portable Hand Exoskeleton for Assessment and Treatment in Neurological Rehabilitation*,
ICORR - Singapore, IEEE, Sept. 2023
- Authors D. Astarita, J. Pan, L. Amato, P. Ferrara, A. Baldoni, F. Dell'Agnello, S. Crea, N. Vitiello, E. Trigili

- Title *Decoding Upper-Limb Movement Intention Through Adaptive Dynamic Movement Primitives: A Proof-of-Concept Study with a Shoulder-Elbow Exoskeleton*,
[ICORR - Singapore, IEEE, Sept. 2023]
- Authors M. F. Penna, E. Trigili, L. Amato, H. Eken, F. Dell'Agnello, F. Lanotte, E. Gruppioni, N. Vitiello, S. Crea
- Title *An active knee orthosis with a variable transmission ratio through a motorized dual clutch*,
Mechatronics, Elsevier, Volume 94, Jan. 2023
- Authors C. B. Sanz-Morère, M. Fantozzi, F. Dell'Agnello, A. Baldoni, F. Giovacchini, S. Crea, N. Vitiello
- Title *A low-power ankle-foot prosthesis for push-off enhancement*,
Wearable Technologies, Cambridge University Press, Volume 4, Jan. 2023
- Authors A. Mazzarini, M. Fantozzi, V. Papapicco, I. Fagioli, F. Lanotte, A. Baldoni, F. Dell'Agnello, P. Ferrara, R. M. Lova, E. Gruppioni, E. Trigili, S. Crea, N. Vitiello
- Title *Uneven terrain recognition using neuromorphic haptic feedback*,
Sensors MDPI, Volume 23-Issue 9, May. 2023
- Authors S. Prasanna, J. D'Abbraccio, M. Filosa, D. Ferraro, I. Cesini, G. Spigler, A. Aliperta, F. Dell'Agnello, A. Davalli, E. Gruppioni, S. Crea, N. Vitiello, A. Mazzoni, C. M. Oddo
- Title *Self-Aligning Finger Exoskeleton for the Mobilization of the Metacarpophalangeal Joint*,
Transactions on Neural Systems and Rehabilitation Engineering, IEEE, Jan. 2023
- Authors E. Peperoni, S. L. Capitani, T. Fiumalbi, E. Capotorti, A. Baldoni, F. Dell'Agnello, I. Creatini, E. Taglione, N. Vitiello, E. Trigili, S. Crea
- Title *NESM-gamma: An Upper-limb Exoskeleton with Compliant Actuators for Clinical Deployment*,
Robotics and Automation Letters, IEEE, Volume 7-Issue 3, Jun. 2022
- Authors J. Pan, D. Astarita, A. Baldoni, F. Dell'Agnello, S. Crea, N. Vitiello, E. Trigili
- Title *A Multimodal Sensory Apparatus for Robotic Prosthetic Feet Combining Opto-electronic Pressure Transducers and IMU*,
Sensors, MDPI, Volume 22-Issue 5, Feb. 2022
- Authors T. Fiumalbi, E. Martini, V. Papapicco, F. Dell'Agnello, A. Mazzarini, A. Baldoni, E. Gruppioni, S. Crea, N. Vitiello
- Title *A Novel Torque-Controlled Hand Exoskeleton to Decode Hand Movements Combining sEMG and Fingers Kinematics: a Feasibility Study*,
Robotics and Automation Letters, IEEE, Volume 7-Issue 1, Sept. 2021
- Authors E. Capotorti, E. Trigili, Z. McKinney, E. Peperoni, F. Dell'Agnello, M. Fantozzi, A. Baldoni, D. Marconi, E. Taglione, S. Crea, N. Vitiello
- Title *Design and characterization of a multi-joint underactuated low-back exoskeleton for lifting tasks*,
BioRob - New York, IEEE, 1146-1151, Dec. 2020
- Authors F. Lanotte, A. Baldoni, F. Dell'Agnello, A. Scalamogna, N. Mansi, L. Grazi, B. Chen, N. Vitiello, S. Crea

Title *Assessment of intuitiveness and comfort of wearable haptic feedback strategies for assisting level and stair walking*,
Electronics, MDPI, Volume 9-Issue 10, Oct. 2020

Authors I. Cesini, G. Spigler, S. Prasanna, J. D'abbraccio, D. De Luca, F. Dell'Agnello, S. Crea, N. Vitiello, A. Mazzoni, C. M. Oddo

Title *Pressure-Sensitive Insoles for Real-Time Gait-Related Applications*,
Sensors, MDPI, Volume 20-Issue 5, Mar. 2020

Authors E. Martini, T. Fiumalbi, F. Dell'Agnello, Z. Ivanić, M. Munih, N. Vitiello, S. Crea

Title *A Wearable Haptic Feedback System for Assisting Lower-Limb Amputees in Multiple Locomotion Tasks*,
International Symposium on Wearable Robotics - Pisa, Springer, 115-119, Oct. 2017

Authors I. Cesini, G. Spiegler, S. Prasanna, D. Taxis, F. Dell'Agnello, E. Martini, S. Crea, N. Vitiello, A. Mazzoni, , C. M. Oddo

Title *Wind speed and direction detection by means of solid-state anemometers embedded on small quadcopters*,
EUROSENSORS - Budapest, Procedia Engineering 168, 802-805, Sept. 2016

Authors P. Bruschi, M. Piotto, F. Dell'Agnello, J. Ware, N. Roy

Title *Integrated Thermal Flow Sensors With Programmable Power Sensitivity Trade Off*,
AISEM - Rome, Springer, 3-7, Feb. 2016

Authors M. Piotto, F. Dell'Agnello, S. Del Cesta, P. Bruschi

Patent

Title *IT201900019902A1*,
Method for the optimized arrangement of pressure sensors and device obtained with this method

Inventors E. Martini, F. Dell'Agnello, T. Fiumalbi, A. Baldoni, S. Crea, N. Vitiello

Computer skills

Basic JAVA, ROS, C#, HTML, Cadence, AutoCAD, SolidWorks, ChatGPT.
Intermediate MATLAB, SIMULINK, SCILAB, VHDL, MacOS, Atlassian JIRA, TwinCAT.
Advanced C, C++, PYTHON, VERILOG, Latex, ASSEMBLER, LABVIEW FPGA, LABVIEW RT, Microsoft Office, Microsoft Project, Dropbox, OriginLab, Corel Draw, Spice, Eagle, ALTIUM, KiCAD, Orcad, COMSOL Multiphysics, Linux, Windows, ELMO Application Studio, Maxon Studio, ETHERCAT.

Certifications

CLAD  National Instruments Certified LabVIEW Developer

ECDL European Computer Driving Licence

Languages

Mothertongue Italian
Professional Fluent English

Driving License

License type B

European driving license for cars and small vans.

Interests

Authorization

In compliance with the General Data Protection Regulation (GDPR) (EU) 2016/679, I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff. I understand and acknowledge my rights under the GDPR, including but not limited to the right to access, rectify, or erase my personal data, as well as the right to data portability and the right to object to the processing of my personal data.

I am committed to ensuring the privacy and security of any personal information shared with me during the application process. Personal data provided by me inside this document will only be used for legitimate purposes related to the recruitment process or professional engagements and will not be shared with third parties without my explicit consent, unless required by law.

Pisa,
03 July 2024