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Giulia Cavenago

curriculum vitae

PERSONAL INFORMATION

Surname	**Cavenago**
Name	**Giulia**
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Nationality	Italian
Date of birth	27/07/1993

Education and training

• Date (from – to)	September 2020 - July 2021
• Name and type of organisation providing education and training	Rete Italiana LCA
Duration of the program of study	1 day (LCA) + 2 days (LCC+SLCA)
• Principal subjects/occupational skills covered	Basic knowledge of LCA methodology, implementation of related exercises.
• Title of qualification awarded	Basic course of Life Cycle Assessment - LCA (September 2020), Basic course of Life Cycle Costing – LCC and Social LCA - SLCA (June 2021)

• Date (from – to)	September 2017 – February 2018
• Name and type of organisation providing education and training	Faculdade de Engenharia do Porto
Duration of the program of study	6 months
• Principal subjects/occupational skills covered	Technologies for regenerative medicine, computational biomechanics laboratory
• Title of qualification awarded	Erasmus+ Program

• Date (from – to)	September 2016- April 2019
• Name and type of organisation providing education and training	Politecnico di Milano
Duration of the program of study	2 years
• Principal subjects/occupational skills covered	Biomechanics, Biomaterials, Biomachines, Physiology
• Title of qualification awarded	MSc in Biomedical Engineering, minor in Biomechanics and Biomaterials
Final mark obtained	105/110

• Date (from – to)	September 2012 - February 2016
• Name and type of organisation providing education and training	Politecnico di Milano
Duration of the program of study	3 years
• Principal subjects/occupational skills covered	Advanced Mathematics, Statistics, Numerical Analysis, Computer Science, Probability
• Title of qualification awarded	BSc in Mathematical Engineering
Final mark obtained	106/110

graduation thesis

Title	MASTER THESIS: Towards photoactivation of [redacted] muscle contraction: a polyethylene-based substrate as a novel tool for cell alignment.
Language	English
Supervisor	Lanzani Guglielmo (Politecnico/IIT)
Thesis Summary	This thesis is located in the field of Bioelectronics, aiming to exploit photostimulation to overcome the limitation of electrode-based methods. The target units of this study are muscular tissue cells. It is presented a novel technique for the fabrication of a flexible, biocompatible and self-standing device which under photostimulation represents a biohybrid actuator with potential applications in robotic and biomedical fields. A substrate made of High-Density Polyethylene (HDPE) is fabricated and provided with topographical cues, which induce the cells seeded above it, to grow following a preferential direction, forming the typical fiber structure of muscular cells. It is in fact demonstrated in the literature that spatial order assembly of contractile apparatus enhances performances. First, it is presented a proof of concept that the pattern built over a non-excitable substrate induces cell alignment; then a semiconducting photo excitable polymer Poly(3-hexylthiophene-2,5-diyl)) (P3HT) is introduced and its ability to interact with muscular cells grown above is investigated. Aiming to couple the optical properties of P3HT to the mechanical behaviour of HDPE, solutions of the two polymers are prepared optimizing their concentration. The result is a photoactive substrate which induces muscular cell alignment and pave the way to applications in robotic and biomedicine.

Title	BACHELOR'S THESIS: Surrogate models dealing with mixed input.
Language	English
Supervisor	Delphine Sinoquet (ifpen), Miguel Munoz Zuniga (ifpen), Laura Sangalli (Politecnico)
Thesis Summary	Computer simulations of oil production is a common tool used to forecast and monitor the production itself. These simulations, which describe the fluid flows in the porous media, rely on complex mathematical and numerical models which are created from the observation of the physical laws involved in the process and from the geological information of the soil. These models are very expensive in computation time, as a consequence the aim of this study: introduce some surrogate models, called Response Surface, to replace the simulator. These Surrogates models are less expensive in terms of computing time and they give some good approximation of the real simulator: the results will be less precise but the timeframe is reasonable. These surrogates express a link between some input and some output variables. Sometimes we have to face with mixed input variables and in this report is treated how to deal with this context. Two main response surfaces are analyzed in this report: COmponent Selection and Smoothing Operator (COSSO) and Gaussian Process (KRIGING). After a theoretical description of them I will test these models on some analytical cases and on a test case derived from a reservoir engineering application. It will be suggested when COSSO outperforms KRIGING and viceversa. Finally I will introduce the Efficient Global Optimization (EGO).

publications and articles submitted

Author(s) and title	G. Cavenago, M. Grosso, L. Rigamonti. Le fasi opzionali di normalizzazione e pesatura nell'analisi del ciclo di vita: approcci possibili e stato dell'arte.
Language	Italian

Publication place	Ingegneria Dell'Ambiente (IDA)
Date of publication	2021

certifications

Certifications of language knowledge	TOEIC (score 815), obtained in 2016 – no expiration date

Work experience, stages, studies abroad

• Date (from – to)	November 2020-ongoing
• Name and address of firm/university	Politecnico di Milano
• Type of business or sector	Environmental and infrastructure engineering department – AWARE Group
• Type of employment	Researcher
• Main activities and responsibilities	I've gone over my knowledge and understanding of the Life Cycle Assessment methodology in depth, looking at the benefits and improvement points. During the fifth edition of the AWARE group's "Waste and Life Cycle Thinking for the Development of a Sustainable Economy," I presented my work, which focused on the normalization and weighting phases of the LCA methodology. The projects I have been involved up to now are: • LCA study of glass packaging and a comparison with other packaging materials commissioned by Assovetro (National association of Glass industries); • Project BEVIMI: LCA study of different drinking water systems (tap water or bottled water) and LCA study of different types of PET waste management; partners of the project are CICMA, Politecnico di Milano, Università Bicocca, and Università degli Studi di Milano Statale, Coripet. • LCA Study of scholastic book (paper + ebook) commissioned by Zanichelli editore S.p.A.

• Date (from – to)	October 2019 - March 2021
• Name and address of firm/university	SOL Group spa
• Type of business or sector	Chemicals
• Type of employment	Regulatory Affairs Officer
• Main activities and responsibilities	I worked in the regulatory affair department of the company, dealing with different products from medicinal gases (like CO2 for laparoscopy and Argon for Plasma Coagulation Technique) to Electro-medical devices as Cryobank Management System and Nitrogen Oxide Therapy device. My activities are mainly focused on the development of the technical file necessary to obtain medical devices certification. This file contains risk analysis, clinical evaluation, safety and compatibility tests, software validation and other documents. Currently, European Union requirements for medical devices trade are changed due to the introduction of MD Regulation 2017/745, therefore the update of the technical files of the company is ongoing.

• Date (from – to)	**March 2016- August 2017**
• Name and address of firm/university	STORENGY
• Type of business or sector	Storengy is a subsidiary of the ENGIE group with various activities (natural gas storage, renewable gas production and storage, and the development of geothermal solutions).
• Type of employment	Developer in Applied Math
• Main activities and responsibilities	My internship was focus on the improvement of CMA-ES Strategies, the developed algorithm was applied for gas and oil storage in subterranean reservoir. I worked in a company where the mathematical language was not familiar to most of the geologist there: this was very useful, because I have learnt the importance of being able to explain complex and technical issues to different audience.

• Date (from – to)	**September 2015 – February 2016**
• Name and address of firm/university	IFPEN
• Type of business or sector	IFP-Energies Nouvelles : public research organisation - optimisation department
• Type of employment	Optimisation and Applied Statistics Intern
• Main activities and responsibilities	I decided to write my Bachelor's thesis in an organisation, I chose IFP-Energies Nouvelles placed in Paris. I worked in the optimisation department, dealing with Response Surface Modelling techniques dedicated to mixed qualitative and quantitative input variables using R studio. The subject of my thesis was: "Surrogate Models with mixed Input Variables : application to well monitoring for OIL and GAS production." This experience helped me to apply what I have studied during my bachelor in the statistic fields, working with two very skilled persons: Delphine Sinoquet and Miguel Zuniga.

Personal skills and competences

Acquired in the course of life and career but not necessarily evidenced by formal certificates and diplomas.

Mother tongue	**Italian**

Other language(s)

	English
• reading	excellent
• writing	excellent
• speaking	excellent

	French
• reading	excellent
• writing	excellent
• speaking	excellent

	Portuguese
• reading	elementary
• writing	elementary
• speaking	elementary

Social skills and competences *Living and working with other people, in multicultural environments, in positions where communication is important and situations where teamwork is essential (e.g. Culture and sports), etc.*	Being in an association with people from different backgrounds and with different characters, taught me how to work in a team, be patient and look for the most effective way to communicate with different people. I have learned to listen to the people with whom I work or organize events looking for a good tuning that allows for success. ***Experiences:*** Volunteer at FREE2CHANGE ODV *from 2019 - ongoing*: Free2change was founded in 2017 with the goal of informing people about climate change, the challenges it poses, and sustainable behaviours that everyone of us can adopt to live in a more conscious way in our world. The association is active on social media, organizes in-person events (in libraries and schools), launches interactive challenges, and has been running online event cycles since March. On the occasion of the European Week for Waste Reduction (20-28 November 2021), I recently held an event titled "an almost zero waste journey." https://www.free2change.it/ Volunteer at BIOMEDICAL ENGINEERING ASSOCIATION (BEA) *from 2017 to 2019:* The aim of the association was to guide Biomedical Engineering students at Politecnico di Milano during their academical path in order to be prepared to enter the job world. I was Co-founder, President (1° year) and Vice-president (2° year). This experience taught me to deal with companies, students, academics and to gain the soft skills I have today as we have founded this association

	from scratch. https://beapolimi.it/en/home_eng/ Volunteer at ABIO – Associazione Bambino In *Ospedale from 2013 to 2015:* Volunteer in hospital in order to play with kids and give basic support to parents. https://abio.org/
Organisational skills and competences *E.g. coordination and management of people, projects and budgets; at work, in voluntary work (e.g. culture and sports) and at home, etc.*	Being responsible for the organization of various events of the associations for which I have done and do volunteer work, has taught me to organize my time and my ideas. I am now able to pursue goals, to perceive the efforts needed to do so but also the final gratification of a successful outcome. ***Experiences:*** Volunteer at FREE2CHANGE ODV *from 2019 - ongoing:* Free2change was founded in 2017 with the goal of informing people about climate change, the challenges it poses, and sustainable behaviours that everyone of us can adopt to live in a more conscious way in our world. The association is active on social media, organizes in-person events (in libraries and schools), launches interactive challenges, and has been running online event cycles since March. On the occasion of the European Week for Waste Reduction (20-28 November 2021), I recently held an event titled "an almost zero waste journey." https://www.free2change.it/ Volunteer at BIOMEDICAL ENGINEERING ASSOCIATION (BEA) *from 2017 to 2019:* The aim of the association was to guide Biomedical Engineering students at Politecnico di Milano during their academical path in order to be prepared to enter the job world. I was Co-founder, President (1° year) and Vice-president (2° year). This experience taught me to deal with companies, students, academics and to gain the soft skills I have today as we have founded this association from scratch. https://beapolimi.it/en/home_eng/ Volunteer at ABIO – Associazione Bambino In *Ospedale from 2013 to 2015:* Volunteer in hospital in order to play with kids and give basic support to parents. https://abio.org/
Technical skills and competences *With computers, specific kinds of equipment, machinery, etc.*	Operating systems: Window, Mac OS Programming: Matlab, R studio, LaTeX, Python (basic knowledge), Microsoft office tools, Google tools Other software: SimaPro, Adobe Illustrator, Open LCA (basic knowledge)
Artistic skills and competences *Music, writing, drawing etc.*	I like to paint (abstract art), play flute and percussion and writing some short novels.
annexes	ANNEX 1: G. Cavenago, M. Grosso, L. Rigamonti. Le fasi opzionali di normalizzazione e pesatura nell'analisi del ciclo di vita: approcci possibili e stato dell'arte.