Franco Pradelli

Computational Biomedical Engineer

About me

I am a biomedical engineer with a strong inclination for computer science. I am interested in computational and predictive medicine and, more broadly, any software application in life science.

Work Experience

Applied Postdoctoral Fellow
@Moffitt Cancer Center (Tampa, FL, USA) | Mar 25 – Now

I recently joined the dept. of Mathematical Oncology under the supervision of Prof. Jeffrey B. West. With him, I will develop mathematical models to characterize drug response, resistance, and drug addiction in cancer. My first project will regard the insurgence of drug resistance in ALCL (Anaplastic Large Cell Lymphoma).

Ph.D. Candidate in Brain, Mind, and Computer Science
@University of Padova (Padova, Italy) | Oct 21 – Feb 25

As a Ph.D. student at the *Biocomputing UP Lab*, I am developing mathematical models to simulate and predict cancer development. My work is to develop highly efficient scientific code processing medical data (mainly images) to produce a simulation of the future development of the tumors I am studying. This experience led me to acquire different skills, starting from the advanced use of Python, Linux, and bash. As my simulations run on High-Performance Clusters (HPCs), I learned how to develop containerized parallel programs using MPI (Message Passing Interface), Singularity, Docker, and Slurm as a job scheduler. I became highly familiar with the theory of the Finite Elements Method (FEM) and the open-source packages to use them (FEniCS, PETSc). I worked with different types of medical images, such as Optical Coherence Tomography (OCT), Computed Tomography (CT), and Magnetic Resonance Imaging (MRI), and with packages to produce automatic segmentations of such images (as nnUNet).

Visiting Scholar
@Universidad Nacional de Quilmes (Bernal, Argentina)

During my Ph.D., I spent a total of 5 months at UNQ to collaborate with a group of experimental biologists to characterize tumor-induced angiogenesis in an *in vivo* system, the Chicken Chorioallantoic Membrane (CAM).

Junior Research Fellow
@University of Padova (Padova, Italy) | Jan – Oct 2021

I started my academic career as a junior research fellow. During this time, I acquired the skills necessary to complete my Ph.D. and built the foundations of scientific projects.

Co-founder of Bioverse
@Bioverse (Bologna, Italy) | Mar 2019 – Oct 2020

Bioverse is a startup that designs a medical device for hospitals in low- and middle-income countries. As one of the founders, I worked on all the different sectors of medical device development. I contributed to the prototyping of the device, learned the principles of Quality and Risk Management, and learned the relevant regulations on medical devices (MDD 93/42/CE; MDR 2017/745). I also represented Bioverse in different startup competitions.

Personal Info
Date of Birth: 22-11-1994
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Languages
Italian: Native
English: C1

Education
Scientific Studies
@ Liceo Scientifico A. Tassoni
Sep 2008 – Jul 2013 (4 yrs 10 mos)

BSc Bioengineering (*cum laude*)
@ University of Bologna
Oct 2013 – Oct 2016 (3 yrs)

MSc Bioengineering (*cum laude*)
@ University of Bologna
Oct 2016 – Mar 2019 (2 yrs 6 mos)

Hard Skills
Operative Systems
Linux, Windows, MacOS

Programming Languages
Python, MATLAB, Bash, Java, C

Markup Languages
LaTeX, Markdown, mdsh

HPC-related
FEniCS, PETSc, Singularity, MPI, Slurm

Git
Git, GitHub,

Containers
Docker, Singularity

IDEs:
PyCharm, VSCode, Eclipse

Medical Images
Optical Coherence Tomography (OCT), Computed Tomography (CT), Magnetic Resonance (MRI), nnUNet

Medical Devices ISOs
ISO 9001, ISO 13486, ISO 60601-1, ISO 1497

Medical Devices Regulation
Medical Device Directive 93/42/CE (MDD 93/42/CE), Medical Device Regulation 2017/745 (MDR 2017/745)

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Electroincs/Prototyping
Arduino

Intern (Junior Scientist)

@MosaMeat (Maastricht, Netherlands) | Sep 2018 – Mar 2019

Mosa Meat is the world leading company in the research and production of bovine cultured meat. During my internship, I worked in the R&D department, more precisely designing and testing strategies to optimize cell culture. The research I carried out during this internship was the basis of my Master thesis.

Education

Master degree in Biomedical Engineering

@University of Bologna (Cesena, Italy) | Sep 2016 – Mar 2019

Final grade: 110 / 110 cum laude
Grade point average: 29,56 / 30
Biomedical engineering is a highly interdisciplinary field that aims to cover all the different intersections between biomedical sciences and engineering. During this course, I could attend many lectures related to biological subjects, such as **Models of Biological Systems**, **Molecular and Cell Bioengineering**, **Biochemistry, Synthetic Biology,** and **Tissue Engineering**.
I also collaborated in two curricular **design projects**, both related to wearable technology for health. One of the projects, which was a monitoring system to prevent work-related injuries, was distinguished for its value and attracted the interest of Automobili Lamborghini S.p.A.
Finally, I worked on a thesis focused on tissue-engineering titled "*Engineering a scalable proliferation process of bovine satellite cells for cultured meat*" (Advisor: Prof E.D. Giordano; Co-advisors: Prof. M.J. Post, Eng. J. Breemhaar) and its details are discussed in the Work Experience section since it has been carried out during my internship at Mosa Meat.

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Bachelor degree in Biomedical Engineering
@University of Bologna (Cesena, Italy) | Sep 2013 – Oct 2016

Final grade: 110 / 110 cum laude
Grade point average: 28,27 / 30
During my BA I acquired mixed competence in computer science, mechanics, and electronics, which provide the necessary foundation for the application of engineering to biomedical sciences. My final thesis title was "*Sviluppo del simulatore Alchemist per la modellazione del movimento cellulare*" (Development of the Alchemist Simulator for cell-movement modeling; Advisor: Prof. M. Viroli; Co-advisor: Dott.ssa S. Montagna) and was strongly related with **bioinformatics** and **biological system modeling**. Indeed, the main objective of the research was to expand an existing computational simulator (Alchemist) to support cell movement, which led me to a) Derive a mathematical and a computational model of chemotaxis and Brownian motion compatible with Alchemist architecture; b) Implement it into the existing software.

Disclosures

I don't have any professional activity outside the Moffitt Cancer Center, where I am currently employed.

I don't have any academic of professional affiliations with the following countries: People's Republic of China; Russian Federation; Islamic Republic of Iran; Democratic People's Republic of Korea; Republic of Cuba; Bolivarian Republic of Venezuela; Syrian Arab Republic.

Soft Skills
Public speaking
Attention to detail
Self-motivation
Creativity
Problem-solving
Teamwork
Team building
Communication
Brainstorming
Adaptability
Emotional Intelligence

Certifications
Italian National Qualification for Biomedical Engineers
Mini-course on MDR 2017/745

Hobbies
Hiking
Ecology
Drawing
Animation
Tabletop games
Mangas and Anime
Languages and cultures
Theatre
Cinema

Other activities
I volunteer in the Association of PhD Students and Doctorates in Italy (ADI).

I played in theatres for almost 10 years with the Modena Theatre Workshop (MTW)

Awards

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Bursary winner for Evolutionary Biology and Ecology of Cancer Summer School (Wellcome Campus, Cambridge)
I was awarded with a grant to take part to this summer school in July 2025.

ECCOMAS 2024 Scholarship
I was awarded with a grant covering the registration cost for the ECCOMAS conference (Lisbon).

ESMTB Travel Support
The European Society of Mathematical and Theoretical Biology (ESMTB) awarded me with a travel support grant to attend the ECCOMAS conference (Lisbon).

Integrated Mathematical Oncology (IMO) Workshop: 2nd best project.
In November 2023, I participated in the 11th IMO Workshop organized by the Moffit Cancer Center in Tampa, Florida. They divided the participants into groups, and each had one week to propose a scientific project. My group scored the 2nd best, winning a 50k-dollar grant to run the project.

Integrated Mathematical Oncology (IMO) Workshop: Travel Award 2023.
In November 2023, I was awarded a full travel award to participate in the 11th IMO Workshop.

Startup competitions
Between 2019 and 2020, I represented Bioverse in different startup competitions. We won the first prize in the "Lifeability Award 2019", organized by the Lions Club (10k, seed fund), we won the first prize in the category "Social Projects" for the award "GoBeyond 2019", organized by Sisal (20k, seed fund), and we were selected among the 15 finalists in the European competition "Social Innovation Tournament (SIT) 2020".

Scientific Production

Publications and preprints

Pradelli, F., Minervini, G., Venkatesh, P., Azad, S., Gomez, H., & Tosatto, S. C. E. (2025). **Mathematical Modeling and Simulation of Tumor-Induced Angiogenesis in Retinal Hemangioblastoma.** arXiv (2025).

Attafi, O. A., Clementel, D., Kyritsis, K., Capriotti, E., Farrell, G., Fragkouli, S.-C., Castro, L. J., Hatos, A., Lenaerts, T., Mazurenko, S., Mozaffari, S., Pradelli, F., Ruch, P., Savojardo, C., Turina, P., Zambelli, F., Piovesan, D., Monzon, A. M., Psomopoulos, F., & Tosatto, S. C. E. (2024). **DOME Registry: implementing community-wide recommendations for reporting supervised machine learning in biology.** In GigaScience (Vol. 13). Oxford University Press (OUP).

Franco Pradelli, Giovanni Minervini, Silvio C E Tosatto. **Patient-specific simulation of Retinal Hemangioblastoma provides new perspectives on the role of antiangiogenic therapy**. bioRxiv (2023)

Franco Pradelli, Giovanni Minervini, Silvio C E Tosatto. **Mocafe: a comprehensive Python library for simulating cancer development with Phase Field Models.** Bioinformatics (2022).

Conferences

Poster (2022) @ VHL Symposium 2022 (online)
Speaker (2023) @ Computational Methods on Non-Globular Proteins (Quilmes, Argentina)
Speaker (2023) @ US National Conference on Computational Mechanics (Albuquerque, New Mexico, USA)
Speaker (2024) @ European Congress on Computational Methods in Applied Sciences and Engineering (Lisbon, Portugal)

Others

I am part of the editorial board of the blog "Mathematical Oncology", followed by more than 2000 scientists. I am part of the team dedicated to the newsletter, and I select each week the new relevant publications in the field of mathematical oncology.

References

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Prof. Pablo Lorenzano Menna
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Mosa Meat

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