



# Filippo Salmoiraghi

Software Development Manager



23 February 1989



Monza, Italy



<https://fsalmoir.github.io/>



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## About me

I currently work at Salmoiraghi S.p.A. as Software Development Manager in the automation field.

I studied engineering at Politecnico di Milano getting the M.Sc. in

Aeronautical Engineering and later on a Master in Management for Digital Innovation at MIP (Politecnico di Milano Business School).

In the meanwhile I spent two years working at SISSA (International School for Advanced Studies), focusing on numerical modelling and applied mathematics.

## Skills

Engineering, Management

Simulation, Data Analysis

Python, HTML, SQL, Matlab

Git, Gitlab, Github, Trello

Latex, Office, Markdown

Linux, OpenSource

## Interests

Thanks to my mixed background, I am always looking for new technological challenges, both from the technical and strategic point of views, that can be plugged in into the automation field.

## Experience

- 2016-now** Software Development Manager Salmoiraghi Automatic Handling S.p.A.  
My main job is, on one hand, to manage the software engineers work (and mine as well) and, on the other, contribute technically to the development and commissioning of systems worldwide.  
Thanks to a strong interaction and collaboration within our team, we are able to complete the activities according to specifications and respecting budgeted time and costs.
- 2014-2016** Research fellow SISSA  
I worked in the Underwater Blue Efficiency project framework, investigating and developing several software programs related to geometrical parametrization, model order reduction and fluid dynamics simulations.  
For these tasks, I designed and contributed to two openSource software libraries: PyGem and EZyRB.
- 2013-2014** Internship SISSA mathLab  
I spent 8 months working on the M.Sc. Thesis with focus on shape parametrization, reduce order models, computational fluid dynamics and isogeometric analysis.

## Education

- 2017-2019** Master in Digital Innovation Management 108/110  
*MIP (Politecnico di Milano Business School)*
- 2013** Master in High Performance Computing pilot courses  
*ICTP, Trieste*
- 2011-2014** M.Sc. in Aeronautical Engineer 110/110  
*Politecnico di Milano*
- 2008-2011** B.Sc. in Aerospace Engineer 110/110  
*Politecnico di Milano*
- 2003-2008** Scientific High school 96/100  
*Liceo Paolo Frisi, Monza*

## Publications

- 2018** Dimension reduction in heterogeneous parametric spaces with application to naval engineering shape design problems
- 2018** Free-form deformation, mesh morphing and reduced-order methods: enablers for efficient aerodynamic shape optimisation
- 2016** Isogeometric analysis-based reduced order modelling for incompressible linear viscous flows in parametrized shapes
- 2016** Advances in geometrical parametrization and reduced order models and methods for computational fluid dynamics problems in applied sciences and engineering: overview and perspectives
- 2014** Reduced Basis Isogeometric Methods (RB-IGA) for the real-time simulation of potential flows about parametrized NACA airfoils

## Certifications

- 2021** OT Networking and Security
- 2020** Computer Vision Fundamentals with Watson and OpenCV
- 2020** Deep Learning Fundamentals with Keras
- 2013** TOEIC - C1 English Level



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## Projects

### PyGeM: Python Geometrical Morphing

PyGeM is a python library using Free Form Deformation to parametrize and morph complex geometries. It is ideally suited for actual industrial problems, since it allows to handle: Computer Aided Design files (in .iges and .stl formats), mesh files (in .unv and OpenFOAM formats) and output files (in .vtk format). By now, it has been used with meshes with up to 14 millions of cells.

### EZyRB: Easy Reduced Basis method

EZyRB is a python library for the Model Order Reduction based on baricentric triangulation for the selection of the parameter points and on Proper Orthogonal Decomposition for the selection of the modes. It is ideally suited for actual industrial problems, since its structure can interact with several simulation software simply providing the output file of the simulations. Up to now, it handles files in the vtk and mat formats. It has been used for the model order reduction of problems solved with matlab and openFOAM.

### Agv Fleet Manager

Development of supervision platforms to manage fleet of vehicles/machines and control the traffic. The system interface, on one side, with the factory (PLCs and installed equipment) for machines handling and on the other side with customer software tools (ERP, MES) for tasks creation and notification. It can work also in autonomous way without any interaction with external tools. Integrated database allows to store the data for logging and report creation purposes.

### Artificial Intelligence applications

Applications of novel data sciences paradigms such as computer vision, deep learning and neural networks to implement automatic tasks spanning from automatic quality control to automatic alignment and people detection.

## Additional Activities

2018-now	MindSphere World Italia membership	Siemens
	Building and developing IoT ecosystems; Support in developing and improving technical solutions and in tapping new markets in the digital economy; Contact with public and private institutions for shaping public opinion and making decisions.	
2022-2023	Automatic machines safety and standards course	Sick AG
	Machinery directive and principles of safety; Risk evaluation analysis and EN ISO 12100; Functional safety and EN ISO 13849-1; Standards for Robots and systems EN ISO 10218-1, EN ISO 10218-2, ISO/TS 15066; Standards for Industrial Trucks and systems EN ISO 3691-4.	
2020	PHD4INNOVATING Mentorship	SISSA
	Innovative approaches and models in Data Science and Mathematical Modeling for port logistics towards greater efficiency, sustainability and better environmental impact.	
2018-2020	Co-Advisor for M.Sc. Thesis	Università di Pavia
	Theoretical implementation of people detection algorithms for machine control; Automation Engineering	
2016	Speaker at SIMAI Biannual Congress	SIMAI
	Reduced Order Methods for Automotive and Nautical applications.	
2015	Speaker at MoRePaS 2015	MoRePaS
	Isogeometric analysis based reduced order modelling for incompressible viscous flows in parametrized shapes: applications to underwater shape design.	

*I hereby grant my consent for the processing of the above personal data under the provisions of Legislative Decree 196/03.*