PERSONAL INFORMATION

Nicola Giuliani

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Sex Male | Date of birth 08/01/1989 | Nationality Italian

JOB APPLIED FOR
POSITION
PREFERRED JOB
STUDIES APPLIED FOR
PERSONAL STATEMENT

Mathematical modeling of complex phenomena is the core of my research. In particular I apply continuum mechanics to derive a proper model and then I exploit numerical analysis to perform a simulation of the phenomenon. Fluid-dynamics and data processing are the tools I have often applied in my academic and research career. I developed quite a good knowledge of some aspects of this science. In particular, during Phd, I've deepened the knowledge of the mathematical problems related to the development of a proper software (data processing, maintenance, unit testing) using also High Performance Computing.

WORK EXPERIENCE

December 2017 – Present

Research Fellow in Applied Mathematics

SISSA (International School for Advances Studies)

- Mathematical modelling of complex biological phenomena
- Numerical analysis of micro-swimmers
- Experimental comparisons of micro-swimmers
- Solution of inverse problems for micro-motility
- Developing of portable HPC code for micro-motility

October 2013 – September 2017

PhD in Mathematical Analysis Modelling and Application   PhD cum laude

SISSA (International School for Advances Studies)

- Mathematical modelling of complex biological phenomena
- Numerical analysis of micro-swimmers
- Performance analysis of micro-swimmers
- High Performance Computing applied to Fluid Structure Interaction problems

EDUCATION AND TRAINING

July 2017

MARS 42 Summer School   Attended

SISSA (International School for Advances Studies), the DOERS

- Lean approach to Innovation
- Introduction to Google digital resources for business
- Systematic Innovation

October 2014 – December 2015

Master in High Performance Computing   Full marks with merit

SISSA (International School for Advances Studies), ICTP (International Centre of Theoretical Physics)

- Parallel programming
- Efficient parallel algorithms
- HPC workstation principles and maintenance
- Best practices in scientific computing

October 2014 – December 2015

Master degree in Aeronautical Engineering   110/110

Politecnico di Milano

- Incompressible and compressible fluid-dynamic
- Structural mechanics for light vehicles
- Dynamic and stability of flying vehicles
- Wind turbine principles
- Fluid Structure Interactions (Aeroelasticity) applied to vehicles, bridges and buildings.
- Principles of Numerical Analysis and Applied Mathematics

| October 2014 – December 2015 | ### Bachelor degree in Aerospace Engineering | 108/110 |

Politecnico di Milano

- Principles of fluid-dynamic and thermodynamics
- Building science introduction
- Vehicle dynamics in atmospheric and space flight
- Material engineering for Aerospace problems
- Introduction to electrical engineering and control theory
- Introduction to scientific computing and programming principles
- Mathematical Analysis

| October 2014 – December 2015 | ### Diploma di Liceo Scientifico (High School Diploma) | 100/100 cum laude |

Liceo Scientifico Alessandro Tassoni

- Basic principles of mathematics and science
- European history and filosophies

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English				
C1	C1	C1	C1	C1
French				
A1	A2	A1	A1	A1

Communication skills
- Public presentations and pitches (scientific conferences and public presentations during Master degree and PhD)
- Scientific writing (scientific papers publication)

Organisational / managerial skills
- Knowledge of project management and of economics principles in a engineering companies (two academic courses 30/30 cum laude, 27/30)
- Teamwork capability acquired during master degree and PhD, active member of European projects (ERC Advanced Grant 340685 MicroMotility, OpenSHIP Simulazioni di fluidodinamica computazionale (CFD) di alta qualità per le previsioni di prestazioni idrodinamiche del sistema carena-elica in ambiente OpenSOURCE)

Job-related skills
- Mathematical Analysis (Advanced analysis courses at SISSA)
- Modelling of complex biological phenomena (micro-swimmer modelling via Boundary Element Method in ERC Advanced Grant 340685 MicroMotility)
- Numerical Analysis (study of efficient algorithms during MHPC and PhD)
- Fluid Structure Interaction of industrial interest (ship-wave interaction in OpenSHIP project)
- Experimental application of micro-motility using optical Microscopy

SELF-ASSESSMENT

	Digital competence	Information processing	Communication	Content creation	Safety	Problem solving
		Proficient User	Independent User	Independent User	Basic User	Proficient User

- Good command of Office suite (Word, Excell, PowerPoint)
- Good command of LaTex texting
- Good command of parallel programming languages (C++, C, FORTRAN) applied to scientific computing
- Good command of scientific computing environments as Matlab, Python, Mathematica

Other skills & Hobbies
- Sailing
- Fencing

Driving licence   A1, B, boat driving license

ADDITIONAL INFORMATION

Publications
Presentations
Projects
Conferences
Seminars
Honours and awards
Memberships
References
Citations
Courses
Certifications

- FEM SUPG stabilisation of mixed isoparametric BEMs : Application to linearised free surface flows, Engineering Analysis with Boundary Elements, 59:8–22 2015
- BlackNUFFT: modular customisable black box hybrid parallelization of type 3 NUFFT in 3D, Computer Physics Communication, 235:324-335 2019
- deal2lkit : a Toolkit Library for High Performance Programming in deal . II, SoftwareX 7:318-327 2018
- πBEM: a flexible parallel implementation for boundary element methods, Advances in Engineering Software 121:39-58 2018
- Predicting and optimizing micro-swimmer performance from the hydrodynamics of its components: the relevance of interactions, SoftRobotics 5:4:411-424 2018
- Speaker at the 6th deal.II Users and Developers Workshop 2018
- Speaker at IUTAM Symposium on motile cells in complex Environments 2018
- Speaker at SISSA AJS seminars in 2015, 2016, 2017, 2018
- Speaker at ECCOMAS congress 2016 in the High Performance computing symposium.
- Participant at Geometrical multi-scale models of the cardiovascular system 2015
- Participant at C1405 Mechanobiology of Cells and Tissues: Motility and Morphogenesis 2014
- Reviewer for International Journal of Non-Linear Mechanics

REFERENTS

- Luca Heltai, heltai@sissa.it
- Antonio DeSimone, desimone@sissa.it
- Andrea Mola, amola@sissa.it
- Gianluigi Rozza, gianluigi.rozza@sissa.it