

Paolo Lampitella

Curriculum Vitae

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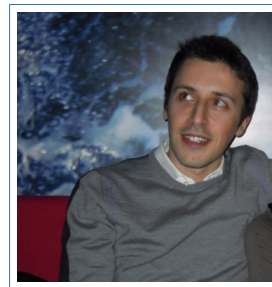
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Personal

Born March 26 1983

Nationality Italian

Status Married

Education

2010–2014 **Ph.D.**, *Politecnico di Milano, Milano, Cum Laude.*

Energy and Nuclear Science and Technology

2005–2009 **M.Sc.**, *Seconda Università di Napoli, Aversa, 110/110 Cum Laude.*

Aerospace Engineering

2001–2005 **B.Sc.**, *Seconda Università di Napoli, Aversa, 110/110 Cum Laude.*

Aerospace Engineering

Doctoral thesis

Title *Large Eddy Simulation for Complex Industrial Flows*

Supervisors Prof. F. Inzoli and Prof. E. Colombo

Description Development of a generalized theoretical LES framework and its application to the finite volume discretization, with the derivation of framework specific SGS models and application to flows of increasing complexity.

Master thesis

Title *The Quality and Reliability of Large Eddy Simulation in a Commercial CFD Software*

Supervisors Prof. F.M. Denaro and Ing. P. Iannelli

Description Assessment of the capabilities of the LES module implemented in the commercial finite volume solver Fluent.

Batchelor thesis

Title *Modellazione ed Implementazione di un Termine Sorgente per la Simulazione Mesh-Free di Micro Vortex Generators in un Codice Commerciale ai Volumi Finiti (in Italian)*

Supervisors Prof. F.M. Denaro and Ing. P. Iannelli

Description Implementation and validation of a source term model for the simulation of Micro Vortex Generators in the commercial finite volume solver Fluent.

Short Courses

February 20 - **Statistical Shape Modeling: Computing the Human Anatomy**, *Graphics and Vision Research Group, University of Basel*, MOOC on FutureLearn.com.

April 14 2017
March 20-23 2012 **Python for Scientific Programming**, *CILEA, Segrate, Italy*.

September 28-30 2011 **Object Oriented Programming in C++**, *CILEA, Segrate, Italy*.

September 21-23 2011 **Procedural Programming in C++**, *CILEA, Segrate, Italy*.

April 12-15 2010 **Parallel and Distributed Computation Techniques**, *CILEA, Segrate, Italy*.

May 26-28 2009 **Large Eddy Simulation of Transitional and Turbulent Flows**, *Cranfield University, Bedford, UK*.

Experience

06/2017– **Co-Founder and CTO**, *PM² Engineering, Aversa, Italy*.

Present The company provides CFD consulting services for different industries and institutions. Besides being involved in the daily consulting jobs, as CTO I developed the core CFD tools employed by the company. More specifically, I:

- Developed from scratch an unstructured, preconditioned, density-based, finite volume CFD solver with a mass-preserving immersed boundary capability and its related grid generator
- Implemented (U)RANS 1-2 equations turbulence models
- Developed a unified thermal/dynamic, (non-)equilibrium wall function formulation
- Developed a new positivity preserving entropy fix for the preconditioned Roe flux difference splitting scheme
- Implemented a Radial Basis Function capability for high order interpolation and gradient computation
- Interfaced the code to PETSc and METIS
- Designed the unified GUI for both the grid generator and solver

- 06/2014– **Software Developer**, *Karalit s.r.l.*, Cagliari, Italy.
- 09/2016 Development and maintenance of an unstructured finite volume immersed boundary code and its native grid generator. Main tasks included:
- Serial and parallel speedup: major code refactoring, including the entire code IO and memory management
 - Improvements in robustness/speed of geometric algorithms (point to polyhedron distance, triangle/box intersection, triangle/segment intersection)
 - Implementation of mesh partitioning and cell reordering algorithms based on Space Filling Curves
 - Implementation of a multizone capability for Conjugate Heat Transfer and similar features
 - Development and implementation of different wall function formulations
 - Improvements of 2 equations turbulence models implementation
 - Routine minor tasks (IO to different data formats, probes, statistics, etc.)
 - Basic research on the immersed boundary method and its different implementations
 - Routine documentation/support tasks
- 07/2013 **Visiting Researcher**, *Mathematics and Computer Science Division, Argonne National Lab*, Lemont, IL, USA.
Training on the Spectral Element code Nek5000.
- 01/2013– **Temporary Researcher**, *Department of Energy, Politecnico di Milano*.
- 09/2013 Implementation/application of advanced SGS models for LES in unstructured finite volume solvers.
- 09/2010– **Teaching Assistant**, *Department of Energy, Politecnico di Milano*.
- 01/2012 Didactic support for the master course "Computational Thermo-fluid Dynamics for Engineering".
- 06/2008– **Internship**, *Centro Italiano Ricerche Aerospaziali (CIRA)*.
- 06/2009 Verification of the capability of the LES module in the commercial CFD solver Fluent.
- 05/2005– **Internship**, *Centro Italiano Ricerche Aerospaziali (CIRA)*.
- 01/2006 Implementation and validation of a source term model for the mesh-free simulation of Micro Vortex Generators in the commercial CFD solver Fluent.

Languages

Italian	Native
English	B295 Points on TOEFL-IBT, June 2009

Computer skills

Programming Languages	Fortran 77/2008, C/C++	Scripted Languages	MATLAB/Octave, Maple
OS	Windows, Unix/Linux	Productivity	Microsoft Office, Latex, Inkscape
CAE Software	Fluent, Gambit, OpenFOAM, Nek5000, Paraview, Visit	Others	MPI, PETSc, METIS, Qt
Versioning	Git		

Main Competences

- Computational Fluid Dynamics, Numerical Analysis, Finite Volume Method
- Direct and Large Eddy Simulation, Turbulence Modeling

- Incompressible Flows, Compressible Flows, Heat Transfer
- Genetic Algorithms, Panel Methods, Radial Basis Functions

Publications

International Conferences

R. Mereu, P. Lampitella, and F. Inzoli. Preliminary fluid dynamic analysis of turbulent flat and ribbed square duct via CFD approach. In *ASME 2014 4th Joint US-European Fluids Engineering Division Summer Meeting*, 2014.

P. Lampitella, R. Mereu, E. Colombo, and F. Inzoli. Large eddy simulation of the flow and heat transfer in a matrix of cubes. In *ASME 2014 4th Joint US-European Fluids Engineering Division Summer Meeting*, 2014.

P. Lampitella, E. Colombo, and F. Inzoli. A dynamic mixed subgrid-scale model for large eddy simulation on unstructured grids: application to turbulent pipe flows. *J. Phys.: Conf. Ser.*, 501(012020), 2014.

P. Lampitella, F. Inzoli, and E. Colombo. Numerical experiments with a new dynamic mixed subgrid-scale model. In J. Fröhlich, H. Kuerten, B.J. Geurts, and V. Armenio, editors, *Direct and Large Eddy Simulation IX*, ERCOFTAC Series, Dresden, Germany, 2013. Springer.

P. Lampitella, R. Mereu, F. Inzoli, and E. Colombo. Implementation of a remap boundary condition for LES applications in Fluent. In *28th Enginsoft International CAE Conference*, Pacengo Lazise, Italy, 2012.

P. Lampitella, F. Cozzi, E. Colombo, and F. Inzoli. Large eddy simulation of an annular swirl injector: a comparison of modeling strategies. In *9th European Fluid Mechanics Conference*, EUROMECH, Rome, Italy, 2012.

P. Iannelli, F.M. Denaro, and P. Lampitella. Micro vortex generators RANS simulation via source term modelling in a commercial CFD solver. In *European Drag Reduction and Flow Control Meeting*, ERCOFTAC, Ischia, Italy, 2006.

National Conferences

P. Lampitella, E. Colombo, and F. Inzoli. A dynamic mixed subgrid-scale model for large eddy simulation on unstructured grids: application to turbulent pipe flows. In *Proc. XXXI UIT Heat Transfer Conference*, 2013.

S. Viaro, P. Lampitella, R. Mereu, E. Colombo, and F. Inzoli. Large eddy simulation of a turbulent pipe flow: a sensitivity analysis on computational parameters. In *Proc. XXX UIT Heat Transfer Conference*, Bologna, Italy, 2012.

F.M. Denaro, A. Abbà, M. Germano, M. Icardi, D. Marchisio, S. Rolfo, P. Lampitella, E. Colombo, F. Inzoli, A. Aproxitola, F.S. Marra, M. Iovieno, and D. Tordella. A comparative test for assessing the performances of large-eddy simulation codes. In *Proc. XX AIMETA Conference*, Bologna, Italy, 2011.

P. Lampitella, E. Colombo, and F. Inzoli. Sensitivity analysis on numerical parameters for large eddy simulation with an unstructured finite volume commercial code. In *Proc. XX AIMETA Conference*, Bologna, Italy, 2011.

P. Lampitella, F. Vandoni, E. Colombo, and F. Inzoli. Flow and heat transfer in a matrix of surface mounted cubes: A comparison of several turbulence modeling approaches. In *Proc. XXIX UIT Heat Transfer Conference*, Torino, Italy, 2011.