CV 2019

Alessio Castorrini

Personal Data

Birth	15/05/1987, Rome, Italy
Nationality	Italian
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Education

B. D	Aerospace Engineering, Sapienza University of Rome, 2006
M. S.	Aeronautical Engineering, Sapienza University of Rome, 2013 Castorrini, A. (2013). "Analysis of helicopter main rotor noise prediction in manoeuvring flight" (Master Thesis, cited by 3 Journal papers)
Ph. D.	Industrial Production Engineering, Sapienza University of Rome, 2017 Castorrini, A. (2017). "Development of CAE tools for fluid-structure interaction and erosion in turbomachinery virtual prototyping" (PhD Thesis)

Professional Experience

08/19-Now	Associate Researcher (RTD-A), School of Engineering, University of Basilicata, PZ, Italy
01/19-07/19	Co-Lecturer (6 of 9 CFU) of Fluid-Structure Interaction Course, Master Degree in Mechanical Engineering, Sapienza University of Rome
11/17-07/19	Postdoctoral Research Engineer, Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy
12/17-07/19	Collaboration in EU Erasmus+ project: "WESET, Wind Engineering Skills in Egypt and Tunisia"
01/18-07/19	Tutoring and teaching support at the Advanced Energy Conversion Systems Course, Department of Astronautical, Electrical and Energy Engineering, Sapienza University of Rome
07/18	Visiting Research Fellow, Faculty of Science and Engineering, Waseda University, Tokyo, Japan
03/17-11/17	Research Engineer with research fellowship, Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy
07/17	Visiting Research Fellow, Faculty of Science and Engineering, Waseda University, Tokyo, Japan
10/15-7/17	Consultant, Structural analysis of fan rotors and blades, SED (Soluzioni per l'energia e la diagnostica), Ferentino, Italy
10/15-7/17	Consultant, Static structural analysis and verification by standards of steam piping system, SED (Soluzioni per l'energia e la diagnostica), Ferentino, Italy
08/15-10/15	Visiting Research Fellow, Faculty of Science and Engineering, Waseda University, Tokyo, Japan
09/14-8/15	Consultant, Aerodynamic analysis of industrial axial fan blades, SED (Soluzioni per l'energia e la diagnostica), Ferentino, Italy
09/13-9/14	Designer & Consultant, Preliminary mechanical and aerodynamic design of a MultiMW wind turbine blade and mechanical drive system, SED (Soluzioni per l'energia e la diagnostica), Ferentino, Italy

Honors and Awards

2017   Best paper award at ASME Turbo Expo 2016 (Seul)

National and International Committees

Member, Fan&Blowers Committee, ASME Turbo Expo 2016-2018

Publications Summary

6	Journal Articles	1	Book Chapters
2	Invited Conference Papers	4	Contributed Conference Papers
1	Patents		

Scopus Citation Count: 47, **h-index**: 4

Researcher ID: 56770141700

Presentations Summary (2015 –2018)

6	Outside Italy	(Argentina, Japan, Norway, South Korea, United States)
5	In Italy	

Computer skills

Programming Languages:

Advanced level: Fortran 77/90/95, C, C++, Python, Matlab, Wolfram Mathematica, LaTex
Basic level: Prolog, Visual Basic

Platforms and operative systems:

Windows, MS-DOS, Linux (Ubuntu, Gentoo, Fedora)

Simulation Tools:

Simulink, Ansys, Fluent, Nastran, Pointwise, OpenFoam, FAST (and the others NREL CAETools), Office

CAD and Graphics:

CATIA v.5, Rhinoceros, 3Ds Max, Blender, AutoCAD, Photoshop

Post-Processing:

Tecplot, Paraview, gnuplot

Computing experience

All the publications reported in the next section have been made using results from self-produced simulation codes of which I am the author or co-author. During my research activity at the Mechanical and Aerospace Department of Sapienza and at TAFSM Lab of Waseda University of Tokyo (2013 - Now), I developed the following simulation tools:

- XENIOS-FSI++: Parallel C++ simulation platform based on FEM for the solution of laminar and turbulent (RANS – VMS) flows, and 3D strong coupling Fluid-Structure Interaction
- Integrated Python solver for erosion/deposit evolution, geometry and mesh morphing.

- (Contribution) PC-Track: Updating of erosion models and particle cloud tracking in the Fortran based code for the simulation of particle transport developed in DIMA

Publications

Journal Articles

1. Castorrini, A., Corsini, A., Rispoli, F., Venturini, P., Takizawa, K., & Tezduyar, T. E. (2019). Computational analysis of performance deterioration of a wind turbine blade strip subjected to environmental erosion. *Computational Mechanics*, 1-21.
2. Castorrini, A., Corsini, A., Rispoli, F., Takizawa, K., & Tezduyar, T. E. (2019). A stabilized ALE method for computational fluid–structure interaction analysis of passive morphing in turbomachinery. *Math Models Methods Appl Sci*. https://doi. org/10.1142 S.
3. Castorrini, A., Venturini, P., Corsini, A., & Rispoli, F. (2019). Numerical Simulation of the Blade Aging Process in an Induced Draft Fan Due to Long Time Exposition to Fly Ash Particles. Journal of Engineering for Gas Turbines and Power, 141(1), 011025.
4. Castorrini, A., Corsini, A., Sheard, A. G., & Rispoli, F. (2018). Numerical Testing of a Trailing Edge Passive Morphing Control for Large Axial Fan Blades. Journal of Engineering for Gas Turbines and Power, 140(3), 032606.
5. Castorrini, A., Corsini, A., Rispoli, F., Venturini, P., Takizawa, K., & Tezduyar, T. E. (2016). Computational analysis of wind-turbine blade rain erosion. Computers & Fluids, 141, 175-183.
6. Gennaretti, M., Serafini, J., Bernardini, G., Castorrini, A., De Matteis, G., & Avanzini, G. (2016). Numerical characterization of helicopter noise hemispheres. Aerospace Science and Technology, 52, 18-28.

Book Chapters

1. A. Castorrini, A. Corsini, F. Rispoli, P. Venturini, K. Takizawa and T.E. Tezduyar, "SUPG/PSPG Computational Analysis of Rain Erosion in Wind-Turbine Blades", Chapter in *Advances in Computational Fluid-Structure Interaction and Flow Simulation: New Methods and Challenging Computations* (eds. Y. Bazilevs and K. Takizawa), *Modeling and Simulation in Science, Engineering and Technology*, Springer (2016) 77-96.

Conference Papers

1. Castorrini, A., Corsini, A., Morabito, F., Rispoli, F., & Venturini, P. (2017, June). Numerical simulation with adaptive boundary method for predicting time evolution of erosion processes. In *ASME Turbo Expo 2017: Turbomachinery Technical Conference and Exposition* (pp. V02DT48A019-V02DT48A019). American Society of Mechanical Engineers.
2. Castorrini, A., Corsini, A., Sheard, A. G., Rispoli, F., & Lamperini, M. (2017, June). Fluid-Structure Interaction Study of Large and Light Axial Fan Blade. In ASME Turbo Expo 2017: Turbomachinery Technical Conference and Exposition (pp. V001T09A012-V001T09A012). American Society of Mechanical Engineers.
3. Castorrini, A., Corsini, A., Sheard, A. G., & Rispoli, F. (2016, June). Numerical study on the passive control of the aeroelastic response in large axial fans. In ASME Turbo Expo 2016: Turbomachinery Technical Conference and Exposition (pp. V001T09A010-V001T09A010). American Society of Mechanical Engineers.

4. Corsini, A., Castorrini, A., Morei, E., Rispoli, F., Sciulli, F., & Venturini, P. (2015, June). Modeling of rain drop erosion in a multi-MW wind turbine. In ASME Turbo Expo 2015: Turbine Technical Conference and Exposition (pp. V009T46A001-V009T46A001). American Society of Mechanical Engineers.
5. A. Corsini, A. Castorrini, P. Venturini and F. Rispoli, Rain erosion numerical modeling applied to multi-MW off-shore wind turbine, pp.139-152. In Marine 2015 - Computational Methods in Marine Engineering VI - ISBN:9788494392863, 97 (2015)
6. A. Corsini, A. Castorrini, M. Boezi, F. Rispoli, Numerical Study on Active and Passive Trailing Edge Morphing Applied to a Multi-MW Wind Turbine Section, pp.106-118. In Marine 2015 - Computational Methods in Marine Engineering VI - ISBN:9788494392863, 97, (2015).

Patents

1. A. CASTORRINI, A. Corsini, F. Rispoli, F. SCIULLI. WO2016006008A1. Joint for modular wind blade and modular wind blade comprising said joint, 2016.

Invited Presentations and seminars

Outside Italy

1. (Seminar) EU Project DIEGO, Universidad Nacional del Sur, Bahia Blanca, Argentina, June 2018, "Wind turbine blade design",
2. 2017 Engineering Mechanics Institute Conference (EMI 2017), San Diego, California, 2017. "Computational analysis of geometry and performance deterioration of a wind turbine blade section subjected to environmental erosion"
3. (Seminar) Waseda University, Tokyo, Japan, September 2015. "Meshing in Computational Physics"

In Italy

1. IACM 19th International Conference on Finite Elements in Flow Problems - FEF 2017, Rome, Italy, 2017. "Numerical Study on Passive Morphing Control Adapted to a Large Axial Fan"
2. ERCOFTAC 'da Vinci Competition', Università di Pisa, 2017. "Development of CAE tools for fluid-structure interaction and erosion in turbomachinery virtual prototyping"
3. (Seminar) EU Project JAMILA. DIMA, Sapienza University of Rome, Italy, 2016. "Multibody aeromechanical simulation of wind turbines using NREL - FAST platform"

Other Presentations

Outside Italy

1. ASME Turbo Expo 2018, Oslo, Norway, "Numerical Simulation of the Blade Aging Process in an Induced Draft Fan Due to Long Time Exposition to Fly Ash Particles"
2. ASME Turbo Expo 2017. Charlotte, North Carolina, USA. "Numerical Testing of a Trailing Edge Passive Morphing Control for Large Axial Fan Blades"
3. ASME Turbo Expo 2016. Seoul, South Korea, 2016. "Numerical study on the passive control of the aeroelastic response in large axial fans

In Italy

1. Marine 2015 - Computational Methods in Marine Engineering VI, Rome, Italy. "Numerical study on active and passive trailing edge morphing applied to a multi-mw wind turbine section"
2. Marine 2015 - Computational Methods in Marine Engineering VI, Rome, Italy. "Rain erosion numerical modeling applied to multi-MW off-shore wind turbine"

Teaching

Graduate
  2019, (Co)Lecturer, Fluid-Structure Interaction (6 of 9 CFU), Mechanical Engineering.
  2019, Tutoring, Advanced Energy Conversion Systems, Energy Engineering.
  2018, Tutoring, Advanced Energy Conversion Systems, Energy Engineering.

Master courses
  2019, Master EFER, Sapienza University of Rome, Lectures, "Wind energy: Technology, Design, Repowering, Economical aspects, and Mini-, Micro- and Offshore applications"
  2018, Master EFER, Sapienza University of Rome, Lectures, "Wind energy: Technology, Design, Repowering, Economical aspects, and Mini-, Micro- and Offshore applications"
  2017, Master EFER, Sapienza University of Rome, Lectures, "Wind energy: Technology, Design, Repowering, Economical aspects, and Mini-, Micro- and Offshore applications"
  2016, Master EFER, Sapienza University of Rome, Lectures, "Wind energy: Technology, Design, Repowering, Economical aspects, and Mini-, Micro- and Offshore applications"
  2015, Master EFER, Sapienza University of Rome, Lectures, "Wind energy: Technology, Design, Repowering, Economical aspects, and Mini-, Micro- and Offshore applications"

Other Professional Activities

Review Service to Scholarly Journals
  Computers & Fluids
  Aerospace Science and Technology
  Journal of Power and Energy

Review Service to Conference Proceedings
  ASME Turbo Expo

Graduate Students (Co)Supervised
M.S.
  Past
    B. Fathi, Energy Engineering, 2018, "Applying Spirodal Winglet to Reduce Vortex Effect at the Tip of Blade (5-MW off-shore wind turbine)"

G. Bartocci, Energy Engineering, 2018, "Studio degli effetti di estremità alari spiroidali in aeromotori"

V. Barnabei, Mechanical Engineering, 2017, "Formulazione lagrangiana aggiornata per la simulazione FEM di strutture a non-linearità geometrica con applicazione ai Tracker solari"

G. Corona, Energy Engineering, 2017, "Analisi Relativa agli Interventi di Repowering Integrale degli Impianti Eolici Vetusti"

T. Ruga, Energy Engineering, 2017, "Studio dinamico di una piattaforma di eolico off-shore con controllo attivo di zavorra"

M. Gamberoni, Energy Engineering, 2017, "Progettazione ottimizzata della struttura di sostegno di una pala eolica"

G. Nori, Energy Engineering, 2017, "Implementazione e valutazione prestazionale di un modello di scia vorticosa per rotori eolici a numero di pale finito"

L. Peluzzi, Energy Engineering, 2016, "Studio dei fenomeni di erosione e di deposito in profili di macchine eoliche"

A. Di Maula, Energy Engineering, 2017, "Studio e applicazione di modelli di scia per un parco eolico"

L. Filoscia, Energy Engineering, 2017, "Analisi e previsione su larga scala degli effetti del repowering su impianti eolici nazionali"

A. Di Lullo, Energy Engineering, 2016, "Studio e Analisi Numerica Comparativa delle Principali Piattaforme Flottanti per Applicazioni Eoliche Off-shore"

G. Z. Herrera, Energy Engineering, 2016, "Studio degli effetti dell'intervento di repowering di un aerogeneratore"

M. Lamperini, Mechanical Engineering, 2016, "Analisi numerica dell'interazione fluido - struttura applicata alla pala di un ventilatore assiale"

A. Laurora, Mechanical Engineering, 2015, "Progettazione di un sistema di controllo avanzato per aeromotore multi - MW ad asse orizzontale"

M. Boezi, Mechanical Engineering, 2014, "Analisi di Interazione Fluido – Struttura di una Pala Eolica con Morphing del Bordo d'Uscita"

E. Morei, Mechanical Engineering, 2014