FEDERICO GHIOLDI, PH.D.

Aerospace Engineer with multiple-year experience in CFD analysis
Assistant Professor at the Department of Aerospace Science and Technology (DAER)
Graduate Teaching Assistant at Politecnico di Milano for CFD / numerical courses
CFD developer of hybrid techniques for heterogeneous High-Performance Computing

CONTACT

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SKILLS

Programming

C++ ●●●●●
Python ●●●●●
Matlab ●●●●●
CUDA ●●●●○
HTML/CSS ●●●○○

Software & Tools

OpenFOAM ●●●●●
CAD ●●●●●
Data handling/analysis ●●●●●
LaTeX ●●●●●
Office suite ●●●●○

Operating Systems

Linux ●●●●○
Windows ●●●●○

Languages

English ●●●●●
Spanish ●●●○○

GENERAL SKILLS

Problem solving | Critical thinking | Multitasking | Empathy | Teamwork | Effective communication

EDUCATION

Doctoral Degree in Aerospace Engineering — With Honours
11/2019 - 01/2023 — Politecnico di Milano, Italy — EQF level 8

Master Degree in Aeronautical Engineering — 110/110 with Honours
10/2016 - 04/2019 — Politecnico di Milano, Italy — EQF level 7

Bachelor Degree in Aerospace Engineering
09/2012 - 09/2016 — Politecnico di Milano, Italy — EQF level 6

PUBLICATIONS

A hybrid CPU-GPU Paradigm to Accelerate Reactive CFD Simulations
Under Review — **F. Ghioldi**, F. Piscaglia — Int. Journal for Numerical Methods in Fluids

GPU acceleration of CFD Simulations in OpenFOAM
2023 — F. Piscaglia, **F. Ghioldi** — Aerospace — DOI

Acceleration of Supersonic/Hypersonic Reactive CFD Simulations via Heterogeneous CPU-GPU Supercomputing
2023 — **F. Ghioldi**, F. Piscaglia — Computer & Fluids — DOI

Multivariable Optimization of Pyramidal Compound Substrates for Cooling of Power-Electronics in Modern Hybrid and Electric Propulsion Systems
2023 — **F. Ghioldi**, J. Hélie, F. Piscaglia — Applied Thermal Engineering — DOI

GPU Acceleration of CFD Simulations in OpenFOAM
2023 — **F. Ghioldi**, F. Piscaglia — 18th OpenFOAM Workshop — (conference)

GPU-Accelerated Simulation of Supersonic Combustion in Scramjet Engines by OpenFOAM
2022 — **F. Ghioldi**, F. Piscaglia — 33rd Int. Conf. on Parallel CFD — (conference)

Novel Developments for Rapid Reactive CFD Simulations of Dual-Fuel IC Engines
2022 — D. Costero, **F. Ghioldi**, et al. — 33rd Int. Conf. on Parallel CFD — (conference)

A Fast Computational Method for the Optimal Thermal Design of Anisotropic Multilayer Structures with Discrete Heat Sources for Electrified Propulsion Systems
2021 — **F. Ghioldi**, J. Hélie, F. Piscaglia — Int. J. of Heat and Mass Transfer — DOI

GRADUATE TEACHING ASSISTANT

M.Sc. Course "Computational Techniques for Thermochemical Propulsion"
09/2020 - present — Dept. of Aerospace Science and Technology, Politecnico di Milano

M.Sc. Course "Aerodynamics"
09/2021 - present — Dept. of Aerospace Science and Technology, Politecnico di Milano

RELEVANT PROJECTS

ENGIMMONIA
https://engimmonia.eu — 09/2021 - present

Project addresses 5 objectives to prove reliability and cost-effectiveness of ammonia engines; it targets future decarbonization of the maritime shipping sector. Consortium is composed of 22 partners from 8 EU countries with high knowledge in all needed scientific branches towards the demonstration of decarbonization technologies.

exaFOAM
https://exafoam.eu — 05/2021 - present

Project aims at overcoming the current limitations of CFD technology by exploiting massively parallel HPC architectures. Developments will be implemented in the open-source CFD software OpenFOAM. Project mobilises a consortium of 12 partners and includes universities, HPC centres, SMEs and code release authority OpenCFD.

Green Propulsion Optimization at Vitesco
https://vitesco-technologies.com/en-us — 11/2019 - 01/2023

Project aims at developing Fast Computational Methods for Optimal Thermal Design of Anisotropic Multilayer Structures with Discrete Heat Sources for Electrified Propulsion Systems. Goals are reducing the environmental impacts of the automotive industry and promoting emission-free mobility and long term sustainability.