FEDERICO GHIOLDI, PH.D.

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

CONTACT

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Federico Ghioldi
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SKILLS

Programming

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

Software & Tools

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

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-Flow CFD Simulations
Under review — **F. Ghioldi**, F. Piscaglia — Journal of Computational Physics

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

Acceleration of Reactive CFD Simulations for Aerospace via the QSS-ARC Model
Under review — **F. Ghioldi**, F. Piscaglia — Aerospace

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

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. Journal of Heat and Mass Transfer

A Methodology for the Aero-thermal Optimization of Hybrid and Electric Propulsion Systems
2021 — E. Gallorini, **F. Ghioldi**, S. M. Aithal, F. Magugliani, F. Piscaglia — 9th Annual OpenFOAM User Conference

A CFD Methodology for the Optimal Thermal Design of the Propulsion System in Electric Motors
2021 — **F. Ghioldi**, E. Gallorini, S. M. Aithal, F. Piscaglia — AIDAA, 26th Intern. Congress

A CPU-GPU Paradigm to Accelerate Turbulent Combustion and Reactive-Flow CFD Simulations
2020 — **F. Ghioldi**, F. Piscaglia — 8th Annual OpenFOAM User Conference

GRADUATE TEACHING ASSISTANT

M.Sc. Course “Computational Techniques for Thermochemical Propulsion”
09/2020 - 12/2022 — Dept. of Aerospace Science and Technology, Politecnico di Milano

M.Sc. Course “Aerodynamics”
09/2021 - 12/2022 — Dept. of Aerospace Science and Technology, Politecnico di Milano

RELEVANT PROJECTS

ENGIMMONIA — https://engimmonia.eu — 09/2021 - 01/2023
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 - 01/2023
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.