

Mohamed Aly **SAYED**

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PROFILE

I'm a hard-working and enthusiastic engineer. I enjoy working with open-minded teams where I have the room for integrating new ideas in a collective effort. Working with world-class companies, and mentoring professionals from both the academic and the industrial sectors has considerably leveraged my leadership, communication and project management skills. I'm also known to be autonomous and results-oriented. I perceive myself to be curious and always willing to push boundaries to explore the forefront of technology.

EDUCATION

- **École polytechnique fédérale de Lausanne (EPFL)** Lausanne, Switzerland
Ph.D. in Complex Particulate Turbulent Flows Nov 2018 – December 2022
- **Grenoble INP University** Grenoble, France
M.Sc. in Fluid Mechanics & Energetics Sep 2017 – August 2018
- **Cairo University** Cairo, Egypt
B.Sc. in Aerospace Engineering Sep 2012 – July 2017

WORK EXPERIENCE

- **Audi Revolut F1 Team (Sauber Motorsport earlier)** Hinwil, Switzerland
CFD Methodology Engineer 2024 - present
 - Develop and improve turbulence models used by Aerodynamicists.
 - Develop and improve the adjoint optimization technique based on different cost functions.
 - Improve the CFD physical modeling to increase prediction accuracy.
 - Contribute to the overall CFD process (pipeline) to reduce the turnaround time.
 - Supervise and mentor more junior roles on various activities.
- **Winterthur Gas & Diesel (WinGD)** Winterthur, Switzerland
CFD Development Expert 2023 - 2024
 - Develop the CFD methodology used for predicting cavitation inside fuel injectors.
 - Develop a heat transfer model for compressible multiphase cavitating flows.
 - Create and moderate a CVS environment for internal code developments.
 - Write Python codes to automate the CFD process within WinGD.
 - Provide CFD support for Engine Performance.
- **Simulitica Ltd (now CFD Dose)** London, UK
CEO 2023 - 2024
 - Founder and main developer of *SplashFOAM*: A dynamic GUI pre-processor for OpenFOAM.
 - Delivering solutions to customers from the automotive, pharmaceutical, and medical industries.
 - Author of T-Flows Crash Course curriculum on Udemy - with over 380+ students
 - Mentoring CFD enthusiasts from both the academic and the industrial sectors.
 - The CFD Dose: Creator of the first CFD community on Skool.

- **Aston Martin Formula One Team** Silverstone, UK
 - CFD Engineer* *2022 - 2023*
 - Develop the CFD methodology used for predicting the flow field around the car.
 - Write Python scripts to automate the CFD baseline for an optimized framework
 - Investigate and assess correlation data for the best fit with the wind tunnel
 - Provide support for the Aerodynamics department.
 - Develop the existing DES methodologies.
- **Paul Scherrer Institut (PSI)** Villigen, Switzerland
 - PhD Researcher* *2018 - 2022*
 - Implementation of Lagrangian Particle Tracking (LPT) algorithm in T-Flows.
 - Validation and testing of hybrid RANS/LES models for complex industrial flows.
 - Implementing wall-modeled Large Eddy Simulation (WMLES) and particle Sub-grid scale models.
 - Performing numerical simulations of complex industrial flows using in-house and commercial CFD codes.
 - Assessing the performance of hybrid RANS/LES models in predicting mono-dispersed particulate flows.
- **ETH Zürich — CMTFD 151-0170-00L** Zürich, Switzerland
 - Teaching Assistant* *2020 - 2022*
 - Solving Benchmark problems using ANSYS Fluent.
 - Giving Exercises on single-phase and multi-phase flow modeling.
 - Exercises on Eulerian/Lagrangian two-phase flow modeling.
- **Swissloop** Zurich, Switzerland
 - CFD Advisor* *2019 - 2023*
 - Mentoring CFD simulations of Swissloop pod, and giving seminars.
 - Supervising M.Sc. and B.Sc. theses under Swissloop project.
- **ArcelorMittal Maizières Research SA** Metz, France
 - Engineering Intern* *Feb 2018 - August 2018*
 - Optimization of Heating Strategies inside Steel Reheating Furnaces.
 - Front-end developer: created software to analyze products inside reheating furnaces.

WORKSHOPS

- **Eidgenössische Technische Hochschule Zürich (ETH)** Zürich, Switzerland
 - Parallel Programming workshop* *August 2020*
 - Distributed memory parallelization with the Message Passing Interface.
 - MPI intermediate: Derived datatype and shared Memory One-sided Communication.
 - Shared Memory Parallelization with OpenMP.
 - Advanced MPI: Memory models and shared memory synchronization rules.
- **AMIT Learning** Cairo, Egypt
 - Embedded Systems Software Diploma* *Jul 2017 - Jan 2018*
 - C Programming & Data Structure, Software Engineering, Embedded system Tools, micro-controller and microprocessor AVR & ARM, Interfacing, RTOS, Testing and validating, and Automotive Bus technology.

- **American University in Cairo (AUC)** Cairo , Egypt
Renewable Energy Workshop *June - Jul 2017*
 - On & Off-grid PV Solar Applications.
- **California Polytechnic State University** California , USA
Robotics workshop *Jul - Aug 2016*
 - Design and assemble an autonomous mobile robot with GPS and IMU.
 - PLC programming language on Allen Bradley (RS Logix 5000 software).
- **Egypt Air** Cairo, Egypt
Engineering Intern [hands-off] *2014*
 - Aircraft Maintenance and Overhauling.

FELLOWSHIPS

- The Zenith Award for Academic Excellence (Valar MBA) - [Zenith](#) (2022 - 2023)
- SNSF PhD Fellowship - [SNSF \[200021-175532\]](#) (2018 - 2022)
- STEM Master's Fellowship - [Al Alfi Foundation](#) (2017 - 2018)

SUPERVISIONS

- Imperial College London — M.Sc. thesis “Study of Hyperloop pod acceleration and deceleration on tube walls” conducted by [Tomas Mrazek](#), (Feb. 2022 - June 2022).
- ETH Zurich — M.Sc. thesis “Study of Hyperloop pod equipped with compressor to overcome the Kantrowitz limit” conducted by [Maurice Bizzozero](#), (Aug. 2020 - March 2021).
- ETH Zurich — B.Sc. thesis “On the Aerodynamic Performance of Successive Travelling Hyperloop Pods”, conducted by [Maria Krinner](#), (Feb. 2020 - June 2020).

CONFERENCES

- ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements - ETMM-15 (Sep. 2025)
- EUROMECH-625 on the Advances in LES of Turbulent Multiphase Flows (June 2022)
- ERCOFTAC on engineering, turbulence, modeling and measurements (Aug. 2021)
- The 6th International Conference on Multiphase Flow and Heat Transfer (Apr. 2021).
- CFD for Nuclear Reactor Safety (CFD4NRS) (Nov. 2020).
- AIAA SciTech convention in Florida, USA (Jan. 2020).
- HZDR short course and conference in Germany (Sep. 2019).
- SpaceX Hyperloop Public Conference (Jan. 2017).

ACTIVITIES

- Member of the green team at the PPA-PSI (2021 - present).
- Volunteer at Resala charitable organization (2015 - 2017).
- IRC member at US Embassy in Cairo (2014).
- IEEE member - Cairo University Branch (2013).
- WAN Student Activity head at Cairo University (2012).

PUBLICATIONS

- Journal publications
 - B. H. Shah, A. Mehmood, M. A. Sayed, M. Awais, 2024, Viscous dissipation effects in a retarded flow region over a von-Kármán slender body of revolution in the presence of heat generation/absorption, *International Communications in Heat and Mass Transfer*.
 - T. Mrazek, S. Yohei, M. A. Sayed, N. Nick, 2023, Investigation of shock waves reflected at the end of a Hyperloop tube, *Journal of Aerospace Science and Technology*.
 - M. A. Sayed, M. Hadziabic, A. Dehbi, B. Niceno, K. Mikityuk, 2022, Simulation of Flow and Heat Transfer in a Differentially Heated Cubical Cavity Using Coarse Large Eddy Simulation, *International Journal of Thermal Sciences*.
 - M. A. Sayed, A. Dehbi, M. Hadziabic, B. Niceno, K. Mikityuk, 2022, CFD Simulation of Particle-Laden Flow in a 3D Differentially Heated Cavity Using Coarse Large Eddy Simulation, *Journal of Flow, Turbulence and Combustion*.
 - M. A. Sayed, A. Dehbi, B. Niceno, K. Mikityuk, 2021, Particle Subgrid Scale Modeling in Hybrid RANS/LES of Turbulent Channel Flow at Low to Moderate Reynolds Number, *Journal of Powder Technology*.
 - M. Bozzizero, S. Yohei, M. A. Sayed, 2021, Aerodynamic study of a Hyperloop pod equipped with compressor to overcome the Kantrowitz limit, *Journal of Wind Engineering and Industrial Aerodynamics*.
- Conference proceedings
 - M. A. Sayed, A. Dehbi, M. Hadziabic, B. Niceno, K. Mikityuk, 2021, On sub-grid scale modeling in a differentially heated cubical cavity using coarse large eddy simulation. 13th International ERCOFTAC symposium on engineering, turbulence, modelling and measurements (ETMM).
 - M. A. Sayed, A. Dehbi, B. Niceno, K. Mikityuk, M. Krinner, Flow Simulation of Gas Cyclone Separator at High Reynolds Number Using the Elliptic-Relaxation Hybrid LES/RANS (ER-HRL) Model, 6th International Conference on Multiphase Flow and Heat Transfer (ICMFHT 2021), April 2021.
 - M. A. Sayed, A. Dehbi, B. Niceno, K. Mikityuk, Validation of Wall Modeled Large Eddy Simulation Against Direct Numerical Simulation In Particulate Channel Flow, the 8th Computational Fluid Dynamics for Nuclear-Reactor Safety (CFD4NRS-8th), 2020.
 - M. A. Sayed, A. Dehbi, B. Niceno, K. Mikityuk, On the Prediction of Turbulent Kinetic Energy in Channel Flow Using Wall-Modeled Large Eddy Simulation, AIAA 2020-1329.

TECHNICAL SKILLS

- MATLAB, C, C++, C#, Python, Fortran 90/95, UI/UX, tkinter, pySide6, Paraview, Qt, React, Git, Shell, ANSYS Fluent, Design of experiments (DOE), OpenFOAM, StarCCM+, Pointwise, Agile framework, L^AT_EX, JIRA, Pycharm, OSs (Windows 10 - MacOS X - Ubuntu).

SOFT SKILLS

- Resilience, autonomy, self-motivation, leadership, public speaking, troubleshooting and design sense, perseverance, business development, self-reflection, and project management.

LANGUAGE SKILLS

- **Arabic** (Native), **English** (Proficient), **German** (B1), **French** (A2), **Italian** (A1)