

# Compiler Technologies: a Tool for Innovation

## Workshop Focus

Compiler technology is experiencing a resurgence in terms of research and technology transfer, enabling the assessment and enforcement of non-functional properties such as security and reliability, as well as the efficient deployment of emerging applications such as AI and simulations and towards emerging platforms such as Quantum Computers. The emergence of MLIR, in particular, is democratizing compiler design to the point where efficient domain specific languages can be tackled by individual experts in a timeframe compatible with the needs of the industrial sector. The workshop presents a set of new compiler-based technologies that have been effectively applied in the context of R&D projects funded by the European Union and the national governments, as well as by industrial sector actors.

## When & Where

📅 Friday, May 9th, 2025

📍 Politecnico di Milano, Campus Leonardo, Room 2.0.2

## Workshop Plan

Time	Topic	Speaker / Affiliation
8:00 – 8:30	Registration	
8:30 – 8:50	Introduction: Compiler Research at Politecnico	Stefano Crespi Reghizzi, Politecnico di Milano
<b>Innovative Compiler Technologies and Applications</b>		
8:50 – 9:10	Quantum Compilation with MLIR	Giacomo Lancellotti, Politecnico di Milano
9:10 – 9:30	<b>Rulebook</b> : a DSL for Reinforcement Learning	Massimo Fioravanti, Politecnico di Milano
9:30 – 9:50	<b>MARCO</b> : efficient compilation of large scale simulations	Michele Scuttari, Politecnico di Milano
9:50 – 10:10	<b>ASPIS</b> : Fault Detection and Hardening with LLVM	Emilio Corigliano, Politecnico di Milano
10:10 – 10:30	<b>TAFFO</b> : Compiler-Enforced Precision Tuning in LLVM	Niccolò Nicolosi, Politecnico di Milano
10:30 – 11:00	<b>Coffee break</b>	
<b>EU and National Research Projects</b>		
11:00 – 11:15	PMDI: Danger Detection in Urban Mobility Scenarios	Alessandro Solinas, Vodafone
11:15 – 11:30	<b>LibreRT</b> : A FOSS Stack for Real Time Parallel Embedded Systems	D. Cattaneo, & F. Terraneo Politecnico di Milano
11:30 – 11:45	<b>ISOLDE</b> : Efficient Real-Time on RISC-V for Space Applications	Federico Reghenzani, Politecnico di Milano
11:45 – 12:00	<b>CAPSARII</b> : Wearable Systems for Health Monitoring	Paolo Belluco, LWT3
12:00 – 12:15	<b>IoT-Vigilance</b> : Security of OT Assets	Fabio Consorte, Infoteam & Paolo Belluco, LWT3
12:15 – 12:30	<b>A.R.C.O.</b> : Automated Risk & Change Operations	Samuel Roberto, Infoteam & Futura
12:30 – 13:30	<b>Light Lunch</b>	
<b>Industrial Experience</b>		
13:30 – 13:50	Promethence	Giacomo Lancellotti, Promethence
13:50 – 14:10	<b>BlueSignals</b>	William Fornaciari, BlueSignals & Politecnico di Milano
14:10 – 14:30	Closing	Giovanni Agosta, Politecnico di Milano

## Registration

Register online:

<https://forms.office.com/e/FuX9Vbca4v>



## Brought to you by

**HEAP**  
LAB



## Acknowledgments



Funded by the European Union under the EDF programme, GA 101168102. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the granting authority. Neither the European Union nor the granting authority can be held responsible for them.