

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



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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.