Ph.D. in Information Technology
Thesis Defense

February 3, 2023
at 15:00
Online by Webex

Serena CURZEL – XXXV Cycle

MODERN HIGH-LEVEL SYNTHESIS: IMPROVING PRODUCTIVITY WITH A MULTI-LEVEL APPROACH

Supervisor: Prof. **Fabrizio Ferrandi**

Abstract:

High-Level Synthesis is an invaluable tool in the design of new hardware accelerators, but it suffers from important limitations when domain experts attempt to use it to synthesize modern data science and machine learning workloads. This thesis proposes a new approach based on multi-level compiler technologies to overcome the abstraction gap between python-based high-level programming frameworks and HLS, to improve performance and portability, and to allow easier design space exploration. The tools and techniques that were developed to support such an approach can be extended with domain-specific abstractions and optimizations. An end-to-end open-source toolchain has been established to provide a fast algorithm-to-chip design flow.

PhD Committee
Prof. **Cristina Silvano,** DEIB - Politecnico di Milano
Prof. **Luca Carloni**, Columbia University, NY
Prof. **Franco Fummi**, UniversitA' degli Studi di Verona