

ELEVATE – Exascale, Quantum Computing and Machine Learning for Innovation in Sciences

The joint doctoral program “Exascale, Quantum Computing and Machine Learning for Innovation in Sciences (ELEVATE)” aims to train twelve doctoral candidates (DCs) to become computational science professionals capable of using, developing and deploying high-performance computing (HPC), quantum computing (QC) and machine learning (ML) methodologies for cutting-edge research in scientific and engineering applications, and to assume future leadership roles in academia and industry. This goal is enabled by the participation of leading experts in HPC, QC, ML and domain scientists in Particle Physics, fluid dynamics and turbulence, and structural biology across eight European countries. They will deliver an interdisciplinary network-wide training program and supervise innovative research projects leading to joint degrees between two degree-awarding institutions (DAIs). A strong intersectoral dimension is embedded in the program: all DCs will complete secondments in industry and/or at supercomputing centers, gaining hands-on experience with emerging architectures, data methodologies and their industrial applications. The program brings together twelve DAIs, three national supercomputing centers in Cyprus, Italy and Germany (including NVIDIA Labs), CERN, and five companies, exposing candidates to diverse research environments and working cultures. This combination of formal training, practical experience and intersectoral mobility is designed to produce graduates with excellent career prospects in both academia and industry, shaping them into professionals well positioned to drive disruptive innovations in their fields. ELEVATE responds to major European investments in supercomputing and quantum computing and addresses the need for new algorithms, software and expertise. By training a new generation of highly skilled researchers, it provides essential human capital to sustain Europe’s leadership in digital technologies for scientific discovery and innovation.

Coordinator: University of Cyprus

Beneficiary: Università di Padova

UNIPD Supervisor: Simone Montangero

Department: Department of Physics and Astronomy

Total Contribution: € 4 299 420,48

Project Duration in months: 60



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