













# INTERNATIONAL MASTER IN COMPUTER SCIENCE AND NETWORKING

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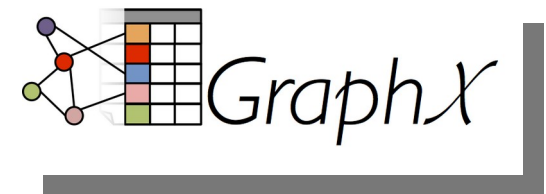
University of Pisa  
Department of Computer  
Science

# Distributed Enabling Platforms

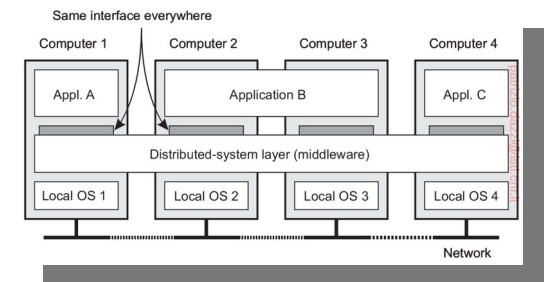


Patrizio Dazzi

**Goal:** learn how to use and efficiently exploit computing platforms enabling the execution of complex and distributed applications



- **Exam:** project + oral discussion
- **Period:** second semester, 4h/week



# Distributed enabling platform (syllabus)

1. Principles of distributed systems and motivating applications for distributed enabling platforms (e.g., centralized vs distributed systems, distribution-transparency, taxonomy of distributed systems, etc.);
2. Software and deployment architectures for distributed enabling platforms (e.g, Resource Virtualization, Microservices, Cloud-based vs. on-premise, Cloud-Edge continuum, etc.);
3. Distributed Data management supported by widely used distributed enabling platforms (e.g., HDFS, RDDs, etc.);
4. Programming abstractions for distributed systems provided by the most popular enabling platforms (e.g., MapReduce, Think-Like-A-Vertex, Pregel, Agent-based, etc.);
5. Distributed enabling platforms for efficient stream processing (e.g., Apache Storm, Apache Kafka, etc.);

# Theses available

- Intelligent resource management and optimizations for distributed enabling platforms;
- AI-based and/or autonomous management of distributed applications with distributed enabling platforms;
- Distributed enabling platforms for next-generation applications (e.g., cloud gaming, autonomous driving, etc.)
- Edge-centric (i.e., decentralized and based on constrained resources) distributed enabling platforms;
- AI-based self-optimizing distributed enabling platforms targeting stream-processing applications;
- Novel application models for distributed enabling platforms;