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FACULDADE DE CIÊNCIAS E TECNOLOGIA
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DEPARTAMENTO DE INFORMÁTICA

Large Scale Distributed Systems

CENTER FOR INFORMATICS AND INFORMATION TECHNOLOGIES

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Currently working on large scale distributed system with special focus on geo-distributed and cloud computing environments.

Objectives

- Rethink the methods and principles currently employed for designing and build cloud services, to better capture the reality of data center environments.
- Improve the performance of geo-replicated systems while providing stronger consistency guarantees than eventual consistency.
- Minimize the need for centralized components in large-scale distributed systems.

Methodology

- Experimentally evaluate the operational conditions of datacenters in terms of observed (as)synchrony and commission faults, confronting these results with typical assumptions made by classical models such as the byzantine model.
- Develop mechanisms that enable the reasoning on the different consistency guarantees in geo-replicated systems in a consolidated fashion.
- Study mechanisms that enable the bridging of the of peer-to-peer and cloud-computing paradigms.

Expected Results

- A new fault model for data center environments.
- A new framework to reason about different levels of consistency in distributed geo-replicated applications that enable one to combine different consistency levels for different operations of an applications, boosting overall system performance and user experience.
- New peer-to-peer architectures that in some small fraction leverage cloud infrastructures to support large-scale applications, such as social networks.

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