FCT
FACULDADE DE
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UNIVERSIDADE NOVA DE LISBOA

Department of Computer Science

Dependable Cloud Systems

CENTER FOR **INFORMATICS** AND **INFORMATION TECHNOLOGIES**
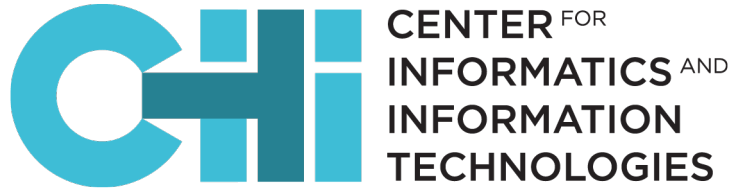
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PhD, MIT, 2005

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Objectives

Cloud computing is being increasingly adopted by individuals, organizations, and governments. However, as the computations that are offloaded to the cloud expand to societal-critical services, the dependability requirements of cloud services become much higher, and we need to ensure that the infrastructure that supports these services is ready to meet these requirements. Our research tackles the challenges that arise from two distinctive characteristic of the cloud infrastructure: the scale of the data centers where cloud services operates, which makes unlikely faults commonplace, and the geographic distribution of data for increased resilience and faster access.

Methodology

We initially define formal, mathematical models that describe the various possible behaviors of the system, allowing us to discern the acceptable ones. We then design distributed algorithms and prove that they meet their desired specification as defined by the formal models. Finally, we build and deploy systems that allow us to validate our ideas in a practical setting, and apply them to the resolution of concrete problems.

Expected Results

We expect to develop new methods and new tools for the construction of more reliable computer systems in general, and cloud services in particular.