DEPARTAMENTO DE INFORMÁTICA

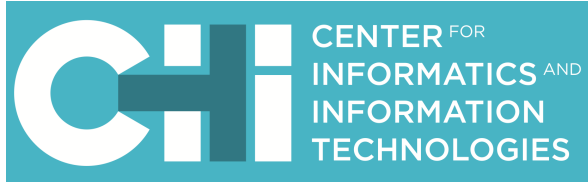# Transactional Memory Verification

COMPUTER SYSTEMS / CR4 Team

CHi CENTER FOR INFORMATICS AND INFORMATION TECHNOLOGIES

João M. Lourenço

Assistant Professor at Dep. Informática – FCT-UNL

Currently working on in-memory data management for multi-core computers using Software Transactional Memory
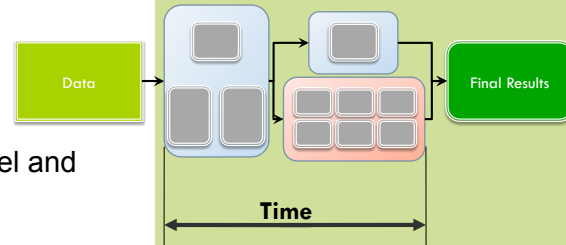
Objectives

- Enabling High-Performance Computing for a broader community of researchers and industry

- Improving the productivity of applications deployed in the Cloud

- Providing software developers with new techniques and tools for parallel and distributed computing

- Improving resource utilization in modern multi-core computers

Methodology

- Use Transactional Memory Paradigm

- Development of mathematical models and computational prototypes

- Design and prototyping of solutions

- Collection and analysis of experimental data (from the execution of benchmarking programs)

- Evaluation by analysis of the experimental results and comparison with related state-of-the-art approaches
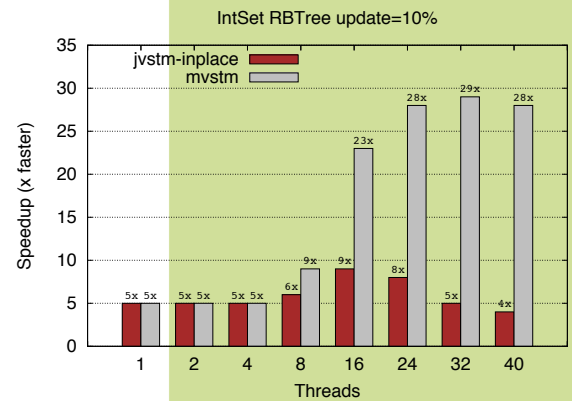
Expected Results

- Advance the state-of-the-art in Transactional Memories

- Design of solutions that enable application deployment in clusters of computers and/or in the Cloud

- Design and prototyping of computational tools

- Contribution to energy efficient computing

- Bring parallel programming to the masses

Parallel Execution

Speedup Analysis

IntSet RBTree update=10%

Detection of Atomicity Violations

Collecting Information — Datarace Detection