

FCT NOVA – COMPUTER SCIENCE PhD PROGRAM

RECONCILING FAULT TOLERANCE AND HIGH PERFORMANCE IN COMPUTER SYSTEMS



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My research focuses on improving the performance of fault-tolerant computer systems.

amazon Es ebal

Before







Our approach





Context and Problem

Approach

transactions.

Serialized

Projects / future directions

- Society is increasingly dependent on services provided by computing systems.
- These systems operate on environments where failures happen.
- Computer systems must tolerate faults.
- Typical approach to built faulttolerant systems requires determinism.
- A) Guarantee that transactions commit in a deterministic order efficiently.

Execute operations as speculative

• Ensure that using multicores

remains deterministic.

 Published A) in ACM TACO journal.



B) under submission.



- But computers have multicore processors, and using them is inherently non-deterministic.
- B) Improve speculation success by allowing transactions to better convey their semantics via an enhanced transactional interface.
- How to reconcile fault tolerance and multicores?

- Throughput (commits per second)
- Possibility of knowledge transfer of B) to relational databases.





