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MADALGO seminars by Francesco Silvestri, University of Padova

Resilient Dynamic Programming

Abstract:

Random access memories suffer from failures that can lead the logical state of some bits to be read differently from how they were last written. Silent data corruptions may be harmful to the correctness and performance of software. In this talk we will address the problem of computing in unreliable (hierarchical) memories, focusing on the design of resilient dynamic programming algorithms. We will present algorithms that are correct with high probability (i.e., obtain exactly the same result as a non-resilient implementation in the absence of memory faults) and can tolerate a polynomial number of faults while maintaining asymptotically the same space and performance as their non-resilient counterparts.

Joint work with Saverio Caminiti, Irene Finocchi, and Emanuele Fusco