SORS: Task-based parallel LU Factorization of Hierarchical Matrices using OmpSs-2

Objectives

Abstract: Large-scale systems of linear equations appear in many fundamental numerical simulations and also in recent methods for data analytics. Hierarchical matrices (H-matrices) lie in-between dense and sparse scenarios, and providean ef?cient numerical tool to store an n × n dense matrix in compressed form achiving logarithmic costs in terms of storage and computations. Task-parallelism has been exposed as an ef?cient approach for the solution of dense and sparse linear algebra problems. Therefore, it is natural to target linear algebra problems that involve H-matrices.
After having investigated the multithreaded parallelization of the LU factorization of hierarchical matrices using the OpenMP and OmpSs task-parallel programming model and runtime, now it is time to focus on exploiting the functionalities of the recently released OmpSs new version.

Short bio: Rocío Carratalá-

Sáez received her B.Sc. Degree in Computational Mathematics by Universitat Jaume I (UJI) of Castellón (Spain) in 2015 and M.Sc. Degree in Parallel and Distributed Computing by Universitat Politècnica de València (Spain) in 2016.She is currently Ph.D. candidate in the Department of Computer Science Engineering at UJI. Her main research interest is High Performance Computing, focused on the parallelization of linear algebra operations for Hierarchical Matrices (H-Matrices).

Barcelona Supercomputing Center - Centro Nacional de Supercomputación