MATLAB*P 2.0: USER FRIENDLY, INTERACTIVE ENVIRONMENT FOR PARALLEL SCIENTIFIC COMPUTING

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Abstract

MATLAB is one of the most widely used mathematical software in technical computing. Because of its ease of use and strong visualization features, it is very often used in numerical experimentations. MATLAB, because of a decision from Mathworks, runs only on a single processor. As the sizes of research problems grow, this becomes a severe limitation. Often problems either take too long to finish, or require more memory than what is available on a single computer.

MATLAB*P [1] tries to get around this limitation by providing a parallel backend to MATLAB which runs on multiple processors. The backend is based on popular and established parallel numerical libraries so good performance is assured. MATLAB*P provides functionalities to perform calculations on very large matrices, as well as embarrassingly parallel operations. One difference between MATLAB*P and other similar projects is that the focus of MATLAB*P is user-friendliness. Parallelization is almost transparent to the user, and existing scripts can be parallelized with minimal changes. The system has been tested successfully on traditional supercomputers and Beowulf clusters.

References

[1] MATLAB*P 2.0: Interactive Supercomputing Made Practical. Master's thesis (in preparation) Massachusetts Institute of Technology, Cambridge, MA, USA