

MultiMATLAB: integrating MATLAB with high-performance parallel computing

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22 997



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Abstract

MATLAB is the most popular scientific computing environment available on uniprocessors today. Unfortunately, no such environment is currently available for multiprocessors. MultiMATLAB [1] is a general extension of the MATLAB environment to any distributed memory multiprocessors. This paper presents a new MultiMATLAB system designed to provide high-performance on multiprocessors while maintaining the functionality and usability of the MATLAB environment. This system will enable users to access high-performance parallel routines from within the MATLAB environment, to extend the environment with new parallel routines, and to use these routines to develop parallel applications with the MATLAB language. We discuss a general MultiMATLAB architecture, present two implementations based upon the MPI communication standard [2], and demonstrate the use of this system. Preliminary results indicate that the MultiMATLAB

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