Abstract

We discuss the importance of parallel process distribution across modern networks and general work done in the area. We explore several algorithms for graph partitioning, including breadth first searches, spectral bisection and the Kernighan/Lin Algorithm. We discuss the Porter program and Professor Scassellati’s robotic software application network that formed the concrete link for this research.

We modify the Kernighan/Lin algorithm to improve graphs with weighted nodes and weighted edges. We explore the use of functionally weighted graphs, and a possible method for partitioning them using the modified Kernighan/Lin algorithm. We discuss the need to generalize the process of mapping one graph onto another, since processor graphs do not always display a regular topology, and present an algorithm for generalize graph-to-graph mapping based on the modified Kernighan/Lin algorithm.

Finally, we discuss the implications of the work, and future work that could be done in the area of parallel process distribution.