異質系統上之動態資源分配演算法

研究生：陳建維　指導教授：陳正 教授

國立交通大學資訊工程學系碩士班

摘要

異質系統上擁有各式各樣的資源，這些資源可分為有計算能力的資源與不具計算能力的資源。也因為具有這些豐富的資源它具有強大的計算能力。如果能在配合上一個有效的工作排程方法將使的整個系統更有效率。但是一般的工作排程上僅考慮到有計算能力的資源，無法有效提升系統的效能。有鑑於此，同時考量兩種資源的工作排程方法將是必要的。在此考量上我們提出了一個兩個步驟的演算法稱為動態資源分配演算法。此方法的第一步驟，我們僅產生一些在第二個步驟會用到的資料。在第二個步驟，我們將選擇一組可同時執行的工作並透過我們所定義的加權值來決定要依何種順序來分配此組工作。透過模擬效能評估顯示我們所提出的方法在效能以及效率上都具有較好的成效。詳細的演算法以及效能評估會在此論文中一一介紹。

A Dynamic Resource Co-allocation Algorithm for Heterogeneity Computing System

Student: Chien-Wei Chen Advisor: Prof. Cheng Chen

Institute of Computer Science and Information Engineering National Chiao Tung University

Abstract

There are many kinds of resources in heterogeneous computing system. The resources can be classified into compute resource and non-compute resource. Because of the various and sufficient resources, heterogeneous computing system can support a powerful execution capability. If there is an efficient and effective mapping algorithm for an application on heterogeneous computing system, the execution capability of it will enormously promote. In general, the mapping algorithms are focus on the compute resource only. Therefore, a mapping algorithm that considers compute and non-compute resources simultaneous is necessary. We propose a two phase algorithm called *dynamic resource co-allocation algorithm*. The first phase only generates the data that will be used in the second phase. The second phase will selected a set of independent tasks and allocate according to the weight of each task in our method. The detailed description of our algorithm and performance evaluation will be given in the literature.

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