Abstract Evaluation Form

Advanced Informatics School (UTM AIS)

UTM Kuala Lumpur

Name: ……

No Matric: …….

Programme: …….

Semester: …….

Main Supervisor :……

Co-supervisor: ……

Title of Thesis: ……..

TITLE OF RESEARCH HERE

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ABSTRACT

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Current formal models of real-time workloads were designed within the context of uniprocessor real-time systems; hence, they are often not able to accurately represent salient features of multiprocessor real-time systems. Researchers have recently attempted to overcome this shortcoming by applying workload models from *Divisible Load Theory* (DLT) to real-time systems. The resulting theory, referred to as *Real-time Divisible Load Theory* (RT-DLT), holds great promise for modeling an emergent class of massively parallel real-time workloads. However, the theory needs strong formal foundations before it can be widely used for the design and analysis of real-time systems. The goal of this thesis is to obtain such formal foundations, by generalizing and extending recent results and concepts from multiprocessor real-time scheduling theory. To achieve this, recent results from traditional multiprocessor scheduling theory were used to provide satisfactory explanations to some apparently anomalous observations that were previously made upon applying DLT to real-time systems. Further generalization of the RT-DLT model was then considered: this generalization assumes that processors become available at different instants of time. Two important problems for this model were solved: determining the minimum number of processors needed to complete a job by its deadline; and determining the earliest completion time for a job upon a given cluster of such processors. For the first problem, an optimal algorithm called MINPROCS was developed to compute the minimum number of processors that ensure each job completes by its deadline. For the second problem, a Linear Programming (LP) based solution called MIN-ξ was formulated to compute the earliest completion time upon given number of processors. Through formal proofs and extensive simulations both algorithms have been shown to improve the nonoptimal approximate algorithms previously used to solve these problems.

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Skeleton for abstract: *(please divide the above abstract into the following headings)*

1	Introduction	
2	Why did you do this study or project?	
3	What did you do, and how?	
4	What did you find? OR What are the advantages (of the method or apparatus)?	
5	What do your findings mean? OR How well does it work?	

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