English summary for Master thesis titled:
"Scheduling algorithms for parallel processing systems performance"

Parallel systems are the most importance architectures to increase the computing power. This system emphasizes parallel processing. Parallel systems are divided into many architectural configurations. A general introduction to these systems is discussed in this thesis. The performance of the parallel processing systems is determined by many parameters that affect the efficiency of the parallel systems. For example, levels of parallelism inherited in the programs, memory and processors management, the processor scheduling strategies, load balance and others. Due to their greater importance, processor scheduling and load balancing strategies will be considered in this thesis.

A parallel model, multiprocessing system, is chosen. An efficient algorithm is introduced for scheduling precedence constrained task graph onto multiprocessor system. The proposed algorithm exploits any free time slots generated in the processors and in the communication channels regardless of the length of the slot during the scheduling process in order to produce better schedules.

Finally, the effectiveness of the proposed algorithm is demonstrated by comparing it with well-known algorithms.

This research is divided into five chapters:

The first chapter is an introduction to the research topic.

The second chapter presents a general introduction to the types and classifications of parallel computer systems, the different levels of parallelism in programs, and the types of operating systems for multiprocessor computers.

The third chapter discusses strategies for load balancing and process scheduling on multicomputers. It presents a classification of load balancing algorithms and a

review of some previous algorithms. It also presents a classification of algorithms for scheduling processes across processors.

The fourth chapter presents a new algorithm that addresses the problem of process scheduling on multicomputers, comparing it to some previous algorithms and explaining the results. The results presented in this chapter were published in [1].

The fifth chapter summarizes the research and provides suggestions for future work.

1. M.A. Abd El-Baky and S.M.M. Nassar, "An Efficient Algorithm for Scheduling Precedence Constrained Task Graphics Multiprocessors," *Sci. Bull. Fac. Eng. Ain Sahms Univ.*, vol. 30, No. 4, Dec., 1995.