

Tribhuvan University

Institute of Science and Technology

**A Single Machine Scheduling To Minimize Weighted
Number of Tardy Jobs with Release Time Constant**

Dissertation

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By

Ganesh Prasad Chataut

Dissertation Supervisor

Prof. Dr. Shashidhar Ram Joshi

Department of Electronics and Computer Engineering,

Institute of Engineering, Pulchowk, Nepal

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Tribhuvan University
Institute of Science and Technology
Central Department of Computer Science and Information Technology
Kirtipur, Kathmandu, Nepal

Date-----

LETTER OF CERTIFICATE

This is to certify that the dissertation work entitled **“A Single Machine Scheduling To Minimize Weighted Number of Tardy Jobs with Release Time Constant”**, submitted by **Mr. Ganesh Prasad Chataut** has carried out under my supervision and guidance. In my best knowledge this is an original work in computer science and no part of this dissertation has been published or submitted for the award of any degree else where in the past.

.....

Prof. Dr. Shashidhar Ram Joshi
Department of Electronics and Computer Engineering,
Institute of Engineering, Pulchowk, Nepal
(Supervisor)

Tribhuvan University
Institute of Science and Technology
Central Department of Computer Science and Information Technology
Kirtipur, Kathmandu, Nepal

LETTER OF APPROVAL

We certify that we have read this dissertation and in our opinion it is satisfactory in the scope and qualify as a dissertation in the partial fulfillment for the requirement of Master of Science in Computer Science and Information Technology (MScCSIT).

Evaluation Committee

Asst. Prof. Nawaraj Poudel
Central Department of Computer
Science and Information Technology
Tribhuvan University, Nepal
(Act. Head)

Prof. Dr. Shashidhar Ram Joshi
Department of Electronics and
Computer Engineering,
Pulchowk, Nepal
(Supervisor)

(External Examiner)

(Internal Examiner)

Date:

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CDCSIT, T.U.

ABSTRACT

Scheduling is a decision making process that has a goal the optimization of one or more objectives. Scheduling concerns the allocation of limited resources to task over a time. Unfortunately, many scheduling problems belongs to the class NP-hard or in simple words, they are not solved exactly by any efficient algorithm on any computer. In this dissertation certain scheduling problems for the case of single machine scheduling is studied. Since $1 || W_j U_j$ is NP-hard, it is not possible to compute exact solution, even for the instances of moderate size. We shall apply the dynamic programming algorithm, branch and bound algorithm. Where preemption is not allowed and, the objective function is to minimize the weighted number of tardy jobs considering release time constant.

ABBREVIATIONS

AGV	Automated Guided Vehicles
AI	Artificial Intelligence
B&B	Branch and Bound
CPU	Central Processing Unit
DP	Dynamic programming
EDD	Earliest Due Date
FCFS	First Come First Serve
FMS	Flexible Manufacturing Systems
I/O	Input/Output
LPT	Longest Processing Time
OS	Operating System
SJF	Shortest Job First
SPT	Shortest Processing Time
SMS	Single Machine Scheduling
SRTN	Shortest Remaining Time Next

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