PROTOTYPE APPLICATION SOFTWARE DEVELOPMENT FOR AUTOMATED GUIDED VEHICLE (AGV) SCHEDULING

by

EVAN CHANDRA
11211066

BACHELOR’S DEGREE in
INDUSTRIAL ENGINEERING

FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY
EduTown BSD City
Tangerang 15339
Indonesia

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains neither material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Evan Chandra
Student

Approved by:

Dr. Ir. Prianggada Indra Tanaya, MME
Thesis Advisor

Dr. Ir. Yuki Indrayadi, MME
Thesis Co-Advisor

Dr. Ir. Gembong Baskoro, M.Sc.
Dean

Evan Chandra
ABSTRACT

A prototype of application software for Automated Guided Vehicle (AGV) scheduling is presented and discussed in this study. Incremental development strategy is adopted for the software prototyping process. The development of the prototype software is done in two stages: modelling and implementation. An object-oriented software model of a manufacturing system with an Automated Guided Vehicle System (AGVS) is built. The model serves as a framework for the implementation stage, in which the computer program for the prototype application is written in the Java programming language. Five case studies are conducted to demonstrate the prototype application. From the case studies, the influence of the parameters of the AGVS on the performance measures of the generated schedules is discovered. The AGVS parameters considered here include the numbers of workstations, jobs and AGVs; whereas the evaluated performance measures are the makespan of the schedule and the AGV utilisation rates.

Keywords: Prototype Application Software, AGV Scheduling, AGV Dispatching, Application Development, Object-Oriented Modelling, Java Programming, Incremental Development
DEDICATION

I dedicate this work to my parents
and to the future of the scientific community.
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