



PROJECT REPORT  
Items Arrangement in Container using Particle  
Swarm Optimization Algorithm

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11.02.0065

2016

INFORMATICS ENGINEERING DEPARTMENT  
FACULTY OF COMPUTER SCIENCE  
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**APPROVAL AND RATIFICATION PAGE**  
**PROJECT REPORT**

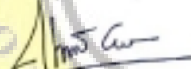
**Items Arrangement in Container using Particle Swarm Optimization  
Algorithm**

by  
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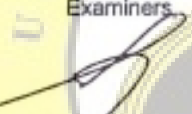
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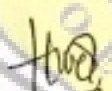
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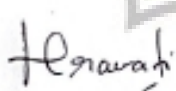
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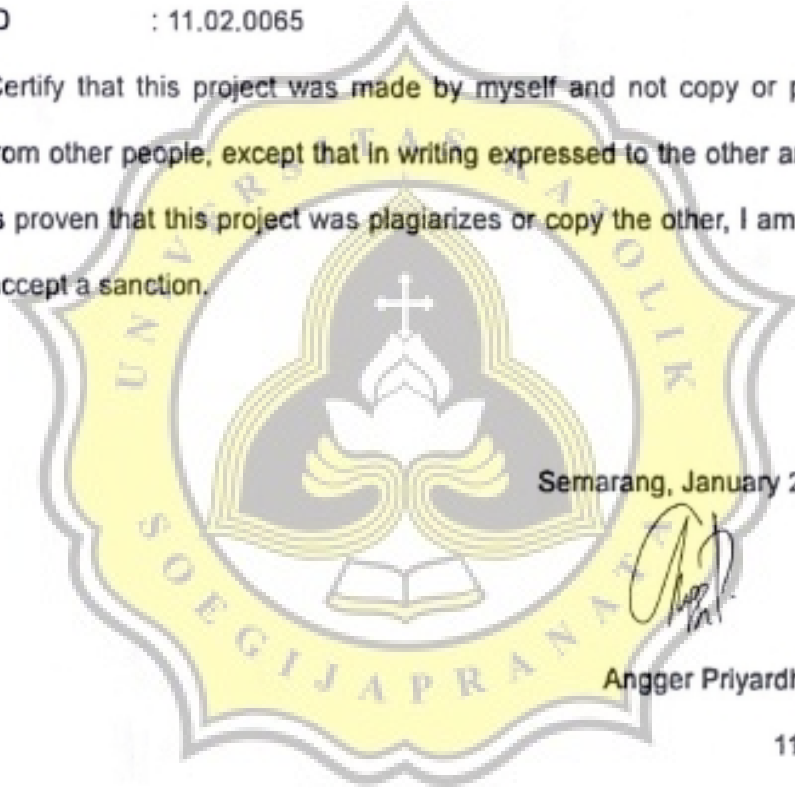
## STATEMENT OF ORIGINALITY

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Semarang, January 26<sup>th</sup>, 2016

  
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## ABSTRACT

*Abstract — For the shipping companies, items arrangement in containers is an important issue. To earn profits as much as possible the preparation of the goods in the container must be as efficient as possible so it can minimize the transportation costs. That is why it needs an algorithm that can help to resolve this problem. One algorithm that can solve this problem is the Particle Swarm Optimization algorithm.*

*This project was made using the Java programming language and the algorithm using Particle Swarm Optimization algorithm. How it works is at first the Particle Swarm Optimization is begin to formed a random solution, after that every solution will counting its fitness, after fitness value is obtained, a solution with a best value will be used as a reference to create a new solution in the next iteration by updating its speed and position.*

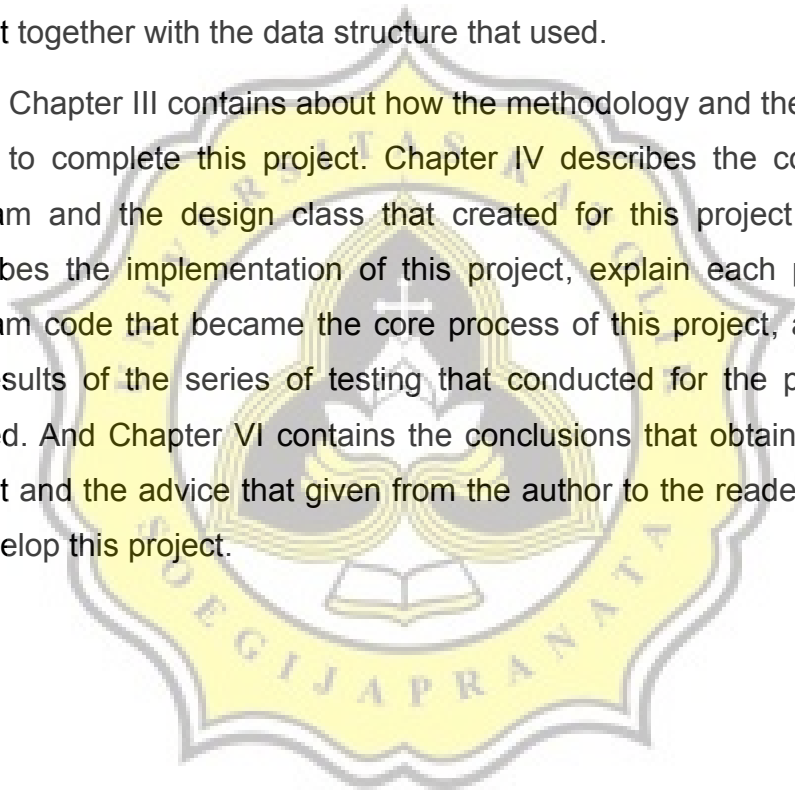
*In this project every particle has several attributes I.e. the code, size and position of the goods in the container. The fitness value is determined from how much free space is available in that solution, the more free space available and the more items available in the container, the more fitness value is.*

**Keywords** : Particle Swarm Optimization Algorithm, Items Arrangement in Container, Optimization, Simulation

## PREFACE

This project report, entitled: Items Arrangement in Container using Particle Swarm Optimization Algorithm are contains some chapters, Chapter I contains the background of the issues that I choose, the problems that exist in this project and the purpose of this project. Chapter II contains an explanation of the algorithms that I choose to make this project together with the data structure that used.

Chapter III contains about how the methodology and the plans that I made to complete this project. Chapter IV describes the course of the program and the design class that created for this project. Chapter V describes the implementation of this project, explain each piece of the program code that became the core process of this project, and displays the results of the series of testing that conducted for the program that created. And Chapter VI contains the conclusions that obtained from this project and the advice that given from the author to the readers who want to develop this project.



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