

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



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**A thesis submitted in a partial fulfillment for Master of
Science in Mathematics in the Department of
Mathematics:
The implementation of interior-point method for solving
nonlinear constrained optimization problems**

By:

Sahar Abd Elgadir Alobeid Abd Alrahim

Supervisor:

Dr. Elzain Ahmed Elzain Gumma

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Dedication

To my family and my colleagues.

Acknowledgement

First, I thank Allah for my enable from finishing this research. I would like to thank my supervisor **Dr. Elzain Ahmed Elzain** for his supporting and providing necessary guidance concerning research. In addition, I express my gratitude and acknowledgement toward my families and colleagues for their help.

Abstract

In this research, we discuss linear and nonlinear programming problems and methods. We have implemented the simplex and interior-point methods for linear programming problems. We also implement interior-point method for nonlinear programming problems. The convergence analysis and complexity of these methods are presented. Computational results that compare between the simplex method and the interior-point method are reported.

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