

**A STUDY IN MATHEMATICAL KINEMATIC MODEL OF
HYPER REDUNDANT MANIPULATOR AND ITS
LOCOMOTION SIMULATION USING V-REP**

By

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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 no 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.

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ABSTRACT

A STUDY IN MATHEMATICAL KINEMATIC MODEL OF HYPER REDUNDANT
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The purpose of this thesis work is to study the mathematical kinematic model in a hyper redundant manipulator and its locomotion using simulation. The mathematical kinematic model is a critical part in designing a hyper-redundant manipulator, and simulation is a very interactive way to design a manipulator. The mathematical kinematic model used in this thesis is serpenoid curve which developed from a sinusoidal wave. The mathematical kinematic model will be input to the model in simulation in V-REP. Some parameters will become the main control in the simulation. The hyper-redundant manipulator in the simulation is represented as snake robot.

The parameters are the main factor affecting the behavior which will become the study of the mathematical kinematic model of hyper-redundant manipulator. The simulation gives an idealistic properties. However some parameters are set to give a more realistic simulation.

This thesis also proposes the further research using the design, model, and behavior that has been obtain in the simulation.

Keywords: Mathematical Kinematic Model, Manipulator, Snake Robot, Simulation,



DEDICATION

I dedicate this work for the God Almighty and meself



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I give my greatest thanks to God Almighty for his blessing throughout my life and that He stay beside me to give me strength to endure and persevere until the very end.

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