

## CONTRIBUTIONS OF THE DISSERTATION

**The thesis title:** Optimal design and control for the Stewart-Gough Platform.

**Specialization:** Electronic Engineering

**Code:** 62 52 02 03

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This thesis proposes the scientific basis for optimized design and control for parallel manipulator type Stewart - Gough Platform, contribute a software toolkit to design and manufacture application systems.

### CONTENTS

1. Created a software toolkit for modeling the parallel manipulator type Stewart - Gough Platform. Apply the toolkit to analyze and evaluate the binding and the special criteria which affect on the operation of the parallel robot.

2. Propose optimal multi-criteria optimization includes genetic algorithm (GA), PSI algorithm and combined GA-PSI algorithm to improve the operation of the Stewart-Gough Platform. The GA-PSI algorithm has ability to reduce the time of optimal process for parallel manipulator.

3. Developed an experimental system has the ability to change the variation different configurations with a decentralized control system. Using the experimental system to check the optimal design and proposed control algorithms.

4. Propose and apply a Fuzzy algorithm, a self tuning Fuzzy-PID algorithm to improve quality system standards into the experimental system.