Robotic Gripper Design: Basic Concept and Evaluation.

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1. Introduction

This project will be made as a course project for 3rd year of study and may subsequently be used as an introduction for undergraduate thesis.

1.1. Project description

This work is dedicated to design, modeling, and experimental evaluation of a mechanical gripper.

1.2. Project value

Robotic grippers are an essential part of modern robotic systems used in industry, and object handling remains one of the most popular applications of robots due to its repetitiveness and low skill requirement, as mentioned by Birglen and Schlicht in their statistical review[1].

1.3. Progress focus

- How the project looks right now
- What you have done in the last two weeks (delta)
- What you haven't done according to your plan
- What obstacles were and how you solved them or planning to address them
- What is the plan for the next two weeks

1.4. Goals

The main goal of this project is to understand how to write scientific articles, apply existing knowledge in practice, and also that research in this area can be useful to people who are interested in this technology.

1.5. Motivation

In my opinion, the best way to learn something better is to practice. So the main motivation for that project is as the goal to apply knowledge, read and write articles and also gain new knowledge in the field of robotics.

1.6. Minimal Viable Product

MVP, which I can defined for that project can be achieved at the end of the 2nd Iteration, and it will be model of mechanical gripper with some analysis, so MVP includes:

- full analysis of gripper
- model in 3D printer

MVP is planned to be done during the first iteration of the project development.

2. Milestones

Notes: 12 hours per week

2.1. Preparations (20/01-03/02)

- read article about one type of grippers analysis
- meeting with supervisor
- plan for next work
- answers for questions:
  - What project will you be working on?
  - What are your goals in completing this project
  - What is your motivation for working on this project?
  - Why should others care about your project?

2.2. Iteration 1 (03/02-17/02)

TMM :

- Open a review article and choose a flu scheme, modeling complexity
- Choose scheme
- Calculate simulate scheme
- CAD
- Verification, movement work
- Scheme is ready

2.3. Iteration 2 (17/02-02/03)

- Optimizations in CAD
- Checking the real balance in power
- Making model in 3D printer

2.4. Iteration 3 (02/03-16/03)

- How to connect to the engine
- Learn to drive the engine

2.5. Iteration 4 (16/03-30/04)

- Optimizations
- Checking the real balance in power

2.6. Iteration 5 (30/04-13/05)

- How to move a gripper with an engine
- Programming (experiments)
- Articles

2.7. Iteration 6 (13/05 - 27/05)

- Presentation designing
- Paper editinig

2.8. Delivery (27/05)

3. References

- Link to GitHub repository
- Link to Trello