Given a helical compression spring in a spring-mass-damper system, what are optimal springs?

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Abstract

An optimal spring depends on a set of constraints and objectives. The application of an optimal spring is subject to change, and for this reason it is important to allow constraints to become objectives and vice versa. The objective of this project is to implement a flexible way to compute an optimal spring given a set of constraints and objectives that are subject to change.

- Summarize the results presented in the report, and the contributions of your research.
- Readers should not have to look at the rest of the paper in order to understand the abstract.
- Keep it short and to the point.

1 Introduction

A helical compression spring is cylindrical in shape.

- Describe the problem you are trying to solve, the approach you took, and summarize your contribution and results.
- Review the history of this problem, and existing literature.
- Give an outline of the rest of the paper.

2 The Problem

- Give a precise technical description of your problem.
- State and justify all your assumptions.
- Define notation.
- Describe your data, how you collected them, their properties, and whether you did anything to them (removed noise, filled in missing data, applied normalizations).

3 The Approach

- Present and justify your approach for solving the problem.
- Explain the advantages of your approach over existing ones.
- Tell a story. Don't just say: "I did this, then I did this, and at last I did this".

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4 Computational Experiments

Give enough details so that readers can duplicate your experiments.

- Describe the precise purpose of the experiments, and what they are supposed to show.
- Describe and justify your test data, and any assumptions you made to simplify the problem.
- Describe the software you used, and the parameter values you selected.
- For every figure, describe the meaning and units of the coordinate axes, and what is being plotted.
- Describe the conclusions you can draw from your experiments

5 Summary and Future Work

- Briefly summarize your contributions, and their possible impact on the field (but don't just repeat the abstract or introduction).
- Identify the limitations of your approach.
- Suggest improvements for future work.
- Outline open problems.