# Preparation of Papers for IEEE Sponsored Conferences & Symposia*

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***Abstract*— Write an abstract here.**

## I. INTRODUCTION

Write the introduction here.

## II. RELATED WORK

### A. Model predictive control

List some papers sharing information about model predictive control.

### B. Solving optimization problems

Mainly introduce [Fast Model Predictive Control Using Online Optimization by Wang and Boyd] and where some usefull features expending its algorithm are discribed. [1]

## III. PROBLEM STATEMENT

### A. Description of a Quadratic Program

Introduce the unchanged problem statement of [1]

### B. Quadratic Constrained Quadratic Program

If linear constraints as bounds for state and control variable are not sufficient it can be necessary to use nonlinear constraints such as quadratic constraints.

$$z^T \Gamma z + \beta^T z \leq \alpha \tag{1}$$

### C. Second Order Cone Program

A more gernal form of contraints are second order cone constraints. An Optimization problem using this type of constraints is called second order cone program. Constraints are described as a second order cone as following: {Description as Cone Definition K:=...} as following inequality:

$$\|Az + b\|_2 \leq c^T z + d \tag{2}$$

### D. Soft Constraints

## IV. EXTENDED ALGORITHM

### A. Generalized Constraints

In the descirbed primal barrier first and second order derivative. A SOCC in the above mentioned form is not continuously differentiable. Therefor SOCC in Generalized form [2] can be used.

$$\|Az + b\|_2^2 \leq \left(c^T z + d\right)^2 \tag{3}$$

### B. Extended Problem Statement

The algorithm of [1] shell still be used, therefor its genreal form is not changed. Only the constant matrix P and the vector h, also constant regardingly the optimizationvariable z, are expended with $p$ rows belonging to the $p$ new quadratic constraints und $q$ rows for the conic constraints. Different from vector $\hat{h}$ matrix $\hat{P}$ In the extended problem statement

### C. Selecting $\kappa$

### D. Nummerical Improvments

## V. RESULTS

### A. Test QPs

Results of Solving Test QPs by [3]

### B. Application Example

## VI. CONCLUSIONS

## APPENDIX

Appendixes should appear before the acknowledgment.

## ACKNOWLEDGMENT

Acknowledgment.

## REFERENCES

[1] Y. Wang and S. Boyd, Fast Model predictive control using online optimization, IEEE Transactions on Control Systems Technology, vol. 18, no. 2, pp. 267-278, March 2010.
[2] S. Boyd and L. Vandenberghe, Convex Optimization
[3] I. Maros and C. Mszros, A Repository of Convex Quadratic ...
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