

Linköping 2023-02-08

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Review of thesis

This is a review of the thesis of Mr. Martin Gurtner with the title "Distributed optimization for multi-object manipulation by shaping spatial force fields."

The thesis is very well written, and it covers an important topic which is relevant to the current needs of the scientific community. More precisely it deals with feedback manipulation through shaping dielectrophoretic force fields. In developing these results novel contributions have been made by Mr. Gurtner. He has developed a sensor applicable for real-time control, a closed-form model for dielectrophoretic force applicable for real-time control, and an optimization method for inverting the model applicable in real-time. Finally, a platform that integrates actuators, sensing and electronics into a compact setup that is also cost-effective has been developed. All of this has been accomplished by using most appropriate methods. It is obvious that Mr. Gurtner is well aware of the literature in the broad area of the field in which he is working, and that his work is creative. It is also believed that it is making an important contribution to science in that this seems to be the first successful implementation of feedback control for this particular application.

The author of the thesis proved to have an ability to perform research and to achieve scientific results. I do recommend the thesis for presentation with the aim of receiving a PhD. degree.

Yours sincerely,


Anders Hansson
Professor Automatic Control