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Multiple-Target Tracking with Advanced Tracking Algorithms

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Abstract

This thesis aims to present a thorough investigation of the theory underlying multiple-target tracking. The overarching goal will be to present the theory in a condensed setting, such that the practical aspect of this challenge is within reach. Multiple-target tracking will be split up into its two main components, namely single-target tracking and data association. These will further be divided into smaller problems, to explain the underlying mathematical structure necessary for solving the problems, and subsequently applying these in a practical setting. A modified approach in data association will be presented and evaluated, which is a necessary modification for dealing with a certain subset of problems that was encountered throughout the process of writing the thesis. This introduced approach will be compared to existing methods in regards to computational running time, to evaluate if it has any practical use. For evaluating the implemented model for tracking, it will be applied to both simulated data, and data from the real world. Here the data from the real world was supplied by Scio+, where the goal in mind with this was to track the movements of livestock in an enclosure. This thesis was done in collaboration with Scio+, who is a part of SKOV A/S.

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