

# Propositions

accompanying the dissertation

## **Model-based Control of Large-scale Baggage Handling Systems**

Leveraging the Theory of Linear Positive Systems for Robust Scalable Control Design

by

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1. Increasing computational power could lead to developing overly complex solutions for rather trivial problems. MPC-based solutions are prime examples in this regard [Chapter 2 of this dissertation].
2. Application of tube-based MPC to large-scale industrial applications calls for developing scalable methods for calculating robust-invariant sets for large-scale systems [Chapter 4 of this dissertation].
3. Dedicated characterizations of controllability and observability for linear positive systems are needed to make a big step forward in the development of dedicated control design methods for such systems [Chapter 5 of this dissertation].
4. For any model-based control solution to be useful in practice, scalability and robustness must be guaranteed by design [this dissertation].
5. MPC tends to be naively seen as a cure-all control design method; but in fact it is merely an effective implementation of the Dynamic Programming solution and inherits the tuning issues of LQ control with respect to designing weight functions.
6. The push for electrification of road transportation is mostly owed to the desire to capitalize on a series of recent technological advancements, notably in lithium-ion battery technology; however, it has little to do with the cause of reducing green-house gas emissions.
7. The mass adoption of Scrum Agile methodology is counterproductive in many ways. It has led to the creation of many unnecessary roles and frequent pointless meetings causing additional overhead for engineers and software developers.

8. In the past decade, English-taught postgraduate programs were the main criterion for a university to be regarded as international. However, for modern universities, such claim is only truly valid by inclusion of internationals in key managerial positions such as deans of faculties.
9. Universities and research institutes do not care about mental and physical health of their scientific staff as much as they care about their academic output.
10. Allowing capitalism to lead the efforts to fight global warming will lead to self-perceived "eco-friendly" profit-driven solutions, which does not address the actual issue at all.

These propositions are regarded as opposable and defensible, and have been approved as such by the promoters prof. dr. ir. B. De Schutter and prof. dr. ir. H. Hellendoorn.