

Intelligent event-based networked formation control

Bachelor/Master, Practical

In a self-organizing networked satellite formation satellite states are updated at a fixed regular interval over the inter-satellite link, even if the local state estimate would still be good enough. This work aims intelligently decide to exchange information only when it is really necessary.

Task Description

Bachelor thesis/Practical

- Predict the formation satellite states using a linear model
- Trigger a state update event if the deviations are too big over a simulated satellite link in Omnet++
- Quantify the decrease in required communication thanks to the new approach

Master thesis (additional tasks)

- Possibility to stay at the Max Planck Institute for Intelligent Systems for part of the thesis
- Integrate the event-based state update into an existing model-predictive formation controller

Preliminary Knowledge

- Bachelor thesis/Practical: Programming in Java
- Master thesis: BA-Knowledge, Basic control theory knowledge (e.g. Robotics II/Advanced Automation, ...)

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Event-based sampling

