

Event-triggered Estimation for Biotechnological Applications

Master's Thesis

In biotechnological applications it is often not feasible to frequently take equidistant measurements. To properly monitor the bioprocess, a sufficient amount of information about the current state of the process is required. Event-triggered estimation can be applied in processes where it is too expensive to take measurements at rather frequent, equidistant sampling times. Using the event-triggered approach eventually leads to an unevenly distributed sampling grid. Hence, an estimation algorithm is required that is able to deal with this unevenly distributed sampling grid.

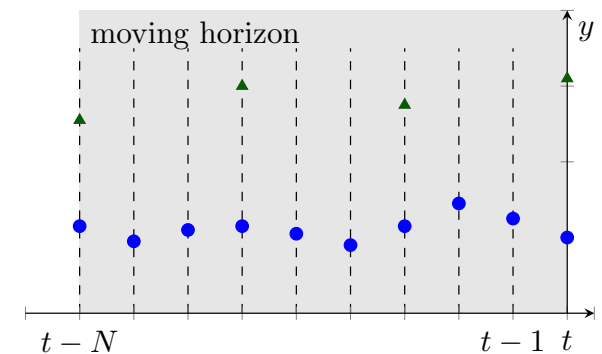
Your tasks will be:

1. Literature review on event-triggered estimation and multi-rate moving horizon estimation
2. Implementation of a multi-rate moving horizon estimation algorithm as part of a previously released toolbox
3. Study of event-triggered multi-rate moving horizon estimation in simulations using a model of a bioreactor as an example

Experience with /
knowledge about: Moving horizon estimation, model-based optimization

Programming skills: Python (good to very good skills required)

Language: English (thesis and presentation), German



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