

Online control of lab pond setup - recorded experiments

Experiment design and results

December 13, 2023

Experiment design

- Online control: i.e., a strategy is synthesized periodically where the model is re-calibrated to the latest water level sensor reading.
- Experiment duration: **140** minutes.
- Rainfall data: **20 minutes light rain 0.1 mm/s followed by** first 120 minutes of the original data.
- Initial water level: **650** mm.
- Physical water limit of setup: **800** mm.
- Duration single control period: 10 minutes.
- Control horizon: 70 minutes.
- Optimization cost function: $\min \mathbb{E}(\alpha o + s + c)$, where o is the accumulated overflow duration, s the particle sedimentation, and c is close to overflow; weight $\alpha = 10,000$.
- Fixed outflow is setting 2 (approx. 50% of pump capacity).
- Learning budget parameters: `–good-runs 200 –total-runs 200 –runs-pr-state 100 –eval-runs 100`
- Discretization: 0.02

Experimental results

