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# Non-preemptive scheduling with non-observable environment

*Tuesday, June 18, 2024 3:00 PM (20 minutes)*

We investigate a non-preemptive scheduling problem within a class of non-observable environments, framed as a restless multi-armed bandit (RMAB) problem characterized by a Markovian dynamics and partial observability. Each arms of this RMAB is modeled as independent Gilbert-Elliot channels with different parameters and the current state of each arms is not observable by the decision-maker so we relied on a belief state for our analysis. The goal is to derive optimal policies that maximize long-run average rewards given the constraints of limited information and non-preemptive service. Our approach involves computing the generative function of the remaining service time based on the current belief state, then using the expected remaining service time to define an index over the different arms. We demonstrate that this index is optimal in the positively auto-correlated case. Additionally, we compare our results to models with observability or preemptive scheduling to quantify the performance loss.

**Presenter:** HIRA, Thomas (IRIT)

**Session Classification:** Poster session