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Reinforcement Learning for CERN's accelerators

Monday, February 5, 2024 4:00 PM (30 minutes)

CERN has a long tradition of model-based feedforward control with a high-level of abstraction. With the recently approved project "Efficient Particle Accelerators", the CERN management commits to go one step further and invest heavily into automation on all fronts. The initiative will therefore also further push data-driven surrogate models, sample-efficient optimisation and continous control algorithms into the current control system. Reinforcement Learning has been part of the CERN algorithm suite before many numerical optimisation algorithms. The many decades old CERN machines do however not easily provide for RL to be used - black-box optimisation algorithms are more easily integrated. This contribution will summarise RL controllers in the making for CERN and will mainly focus on CERN's RL vision - offline RL, the importance of being able to deal with partially observable systems, and the necessity for continuously learning controllers.

Possible contributed talk

No

Are you a student?

No

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