Role of State in Partially Observable RL

(Doctoral Consortium)

(Keywords: RL, Partial Observability, Asymmetric RL, Privileged Training)

AAMAS 2025, Detroit, MI, USA

Andrea Baisero {baisero.a@northeastern.edu}
Northeastern University, Boston, MA, USA

Role of State in Partially Observable RL

Problem Statement:

- Partially observable RL remains a significant challenge.
- Privileged training frameworks use state during training.
- Empirically successful, but poorly understood (*state should not matter*!)

Research Question: Why does state help privileged training algorithms?

Role of State Hypotheses:

- State as Information
- State as a Feature
- State as Exploration
- State as Bootstrapping

Methodology:

- Latent Observations
- Counterfactual History-State Values
- Noisy History Values
- Feature Importance Analysis