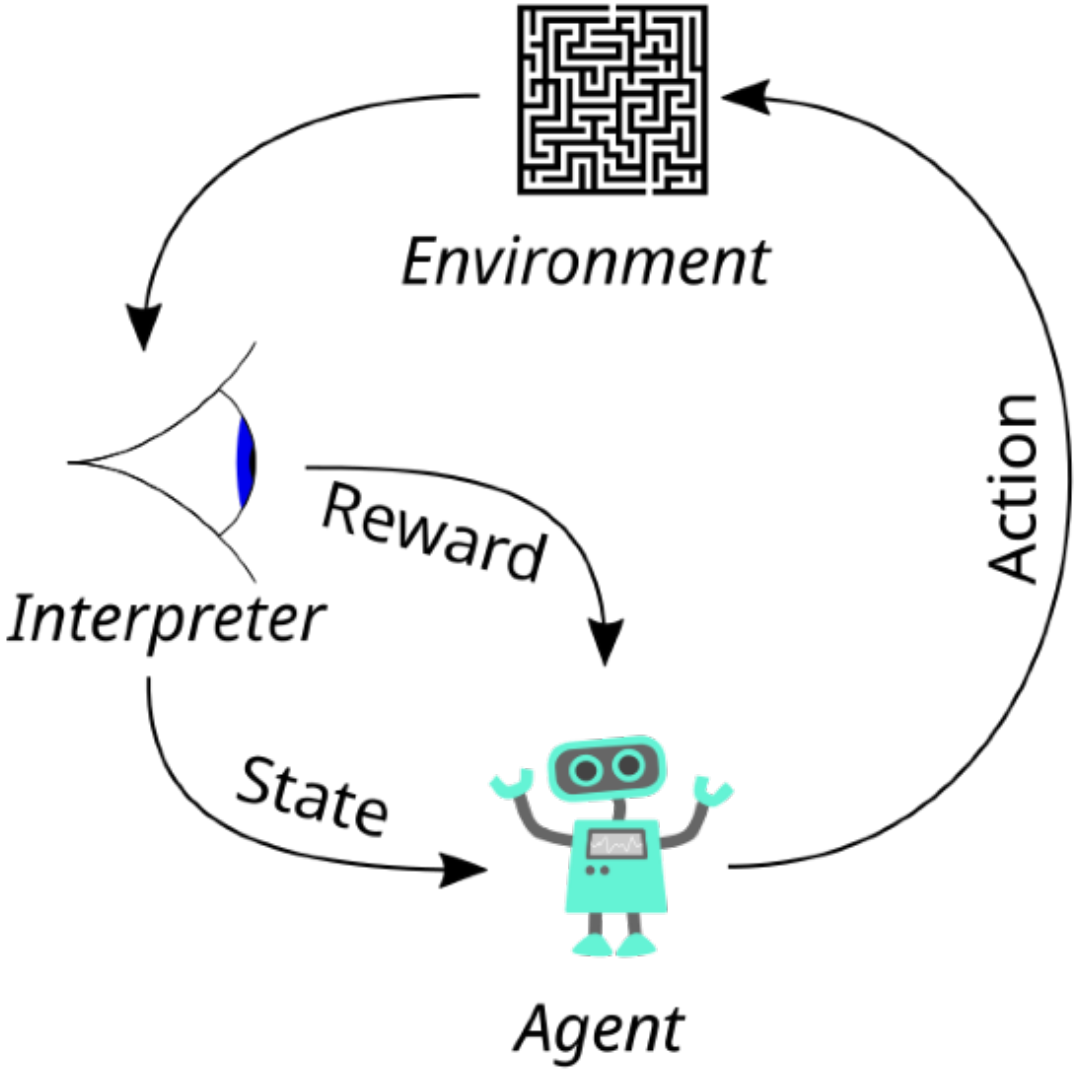
With a RM provided ,
the learning process converges significantly faster[2]

Reward Machines


Environment
Reward
Interpreter
State
Action
Agent

Reinforcement Learning

The feedback is in form of rewards!

Reward Machines (RM)

use automata or temporal logics to capture non-Markovian rewards!

1. EM Hahn, M. Perez, S. Schewe, F. Somenzi, A. Trivedi, D. Wojtczak (ECAI'23): ω-Regular Reward Machines

by the user

ω-regular (long horizon) tasks! → **ω-regular reward machines**[1]

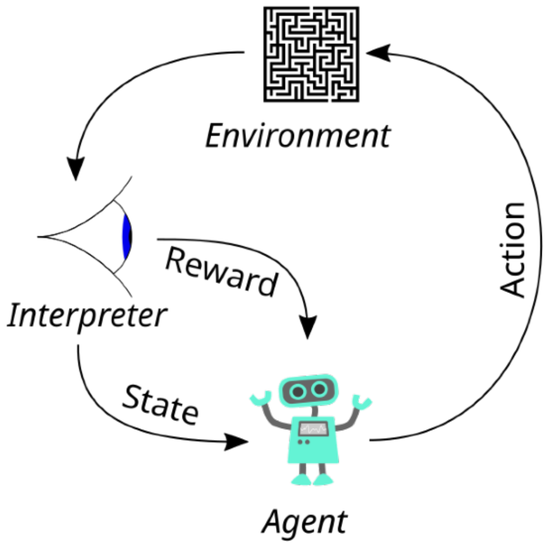
50

Hard for sequential or long-horizon tasks!

2. RT Icarte, T. Klassen, R. Valenzano, S. McIlraith (ICML'18) : Using Reward Machines for High-Level Task Specification and Decomposition in Reinforcement Learning

Reward Machines

Reinforcement Learning



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Joint Inference of RMs & Policy

Hypothesis
Specification φ

1. Z. Xu, I. Gavran, Y. Ahmad, R. Majumdar, D. Neider,U. Topcu, B. Wu (ICAPS'20): Joint Inference of Reward Machines and Policies for Reinforcement Learning