Atari Breakout with LTL_f/LDL_f Goals

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Introduction

Intro.
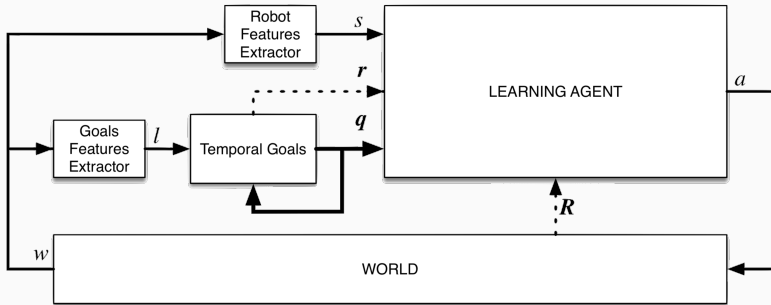
Q-Learning

Q-Learning brief description.

$$Q(S_t, A_t) \leftarrow Q(S_t, A_t) + \alpha \Big[R_{t+1} + \gamma \max_a Q(S_{t+1}, a) - Q(S_t, A_t) \Big]$$

SARSA

SARSA brief description.

$$Q(S_t, A_t) \leftarrow Q(S_t, A_t) + \alpha \Big[R_{t+1} + \gamma Q(S_{t+1}, A_{t+1}) - Q(S_t, A_t) \Big]$$

LTL$_f$/LDL$_f$ non-Markovian rewards + integration in our project.

Figure 1: Pipeline describing how the agent is interacting with the world and how the robot features extractor and the goal features extractor are used in order to handle non-Markovian rewards.
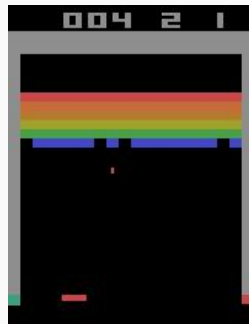
Results of the paper and our starting point.

Our results on 6×18 non-Atari Breakout + video.

Introduction to Gym + ALE
Differences with non-Atari Breakout (initial hypotheses)
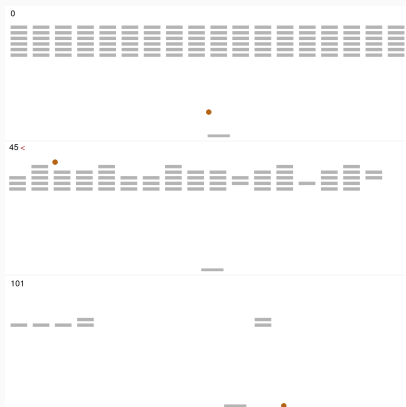
Implementation

Algorithms.

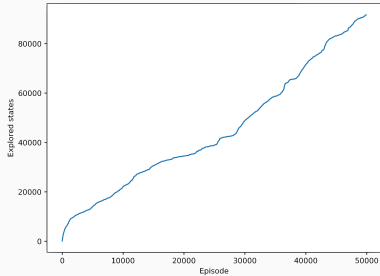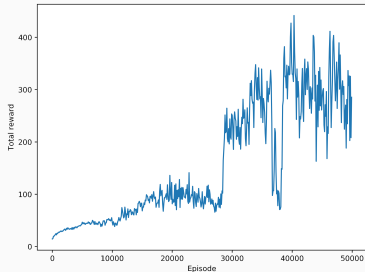Algorithms.
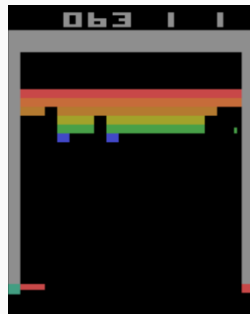
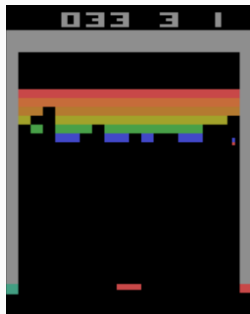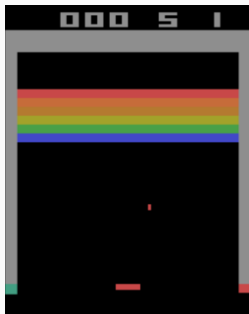Algorithms.

Experiments

All the experiments.

Description.

Experiments

PyGame SARSA.

Experiments

Atari frames.
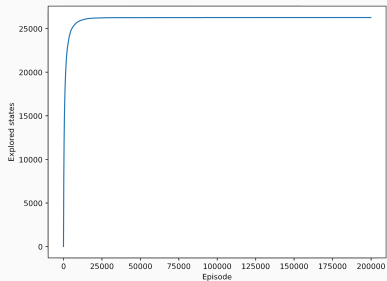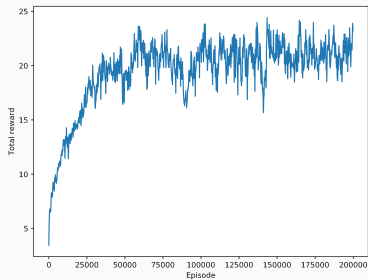
Atari Q-Learning.

Atari SARSA.

Conclusion

Conclusion.

Q&A

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