Atari Breakout with LTL_f/LDL_f Goals

Ivan Bergonzani, Michele Cipriano, Armando Nania

Professor: Giuseppe De Giacomo

Elective in Artificial Intelligence: Reasoning Robots
Department of Computer, Control and Management Engineering
Sapienza University of Rome

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

LTL_f/LDL_f non-Markovian rewards + integration in our project.

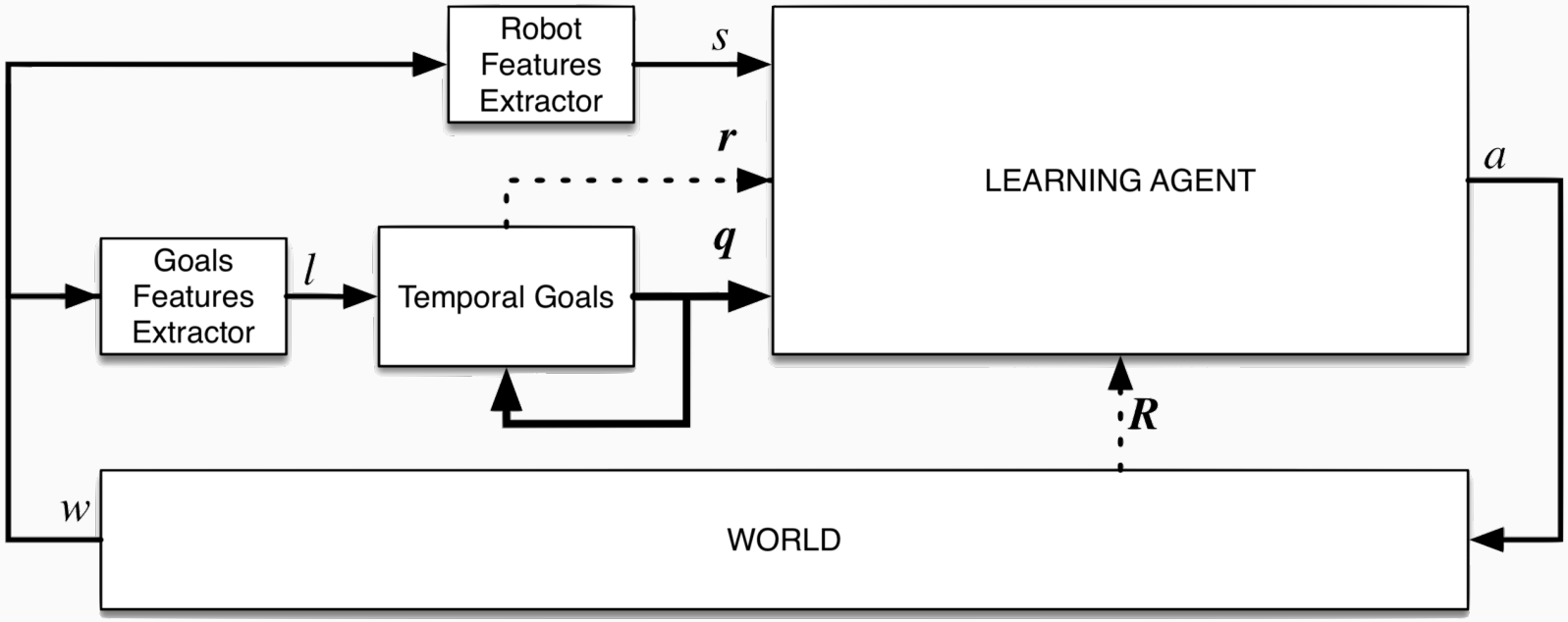


Figure 1: Pipeline describing how the agent is interacting with the world and how the robot features extractor and the goal features extractor are used in order to handle non-Markovian rewards.

Non-Atari Breakout

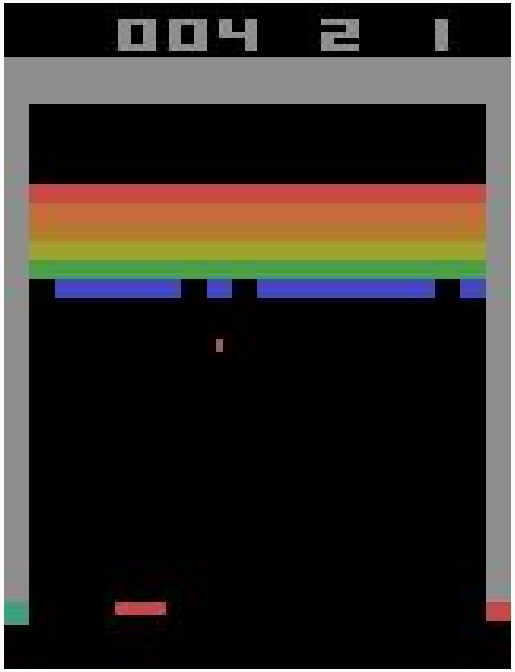
Results of the paper and our starting point.

Non-Atari Breakout (6×18)

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

Atari Breakout

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



Implementation

Robot Features Extraction

Algorithms.

Goal Features Extraction

Algorithms.

Temporal Goals

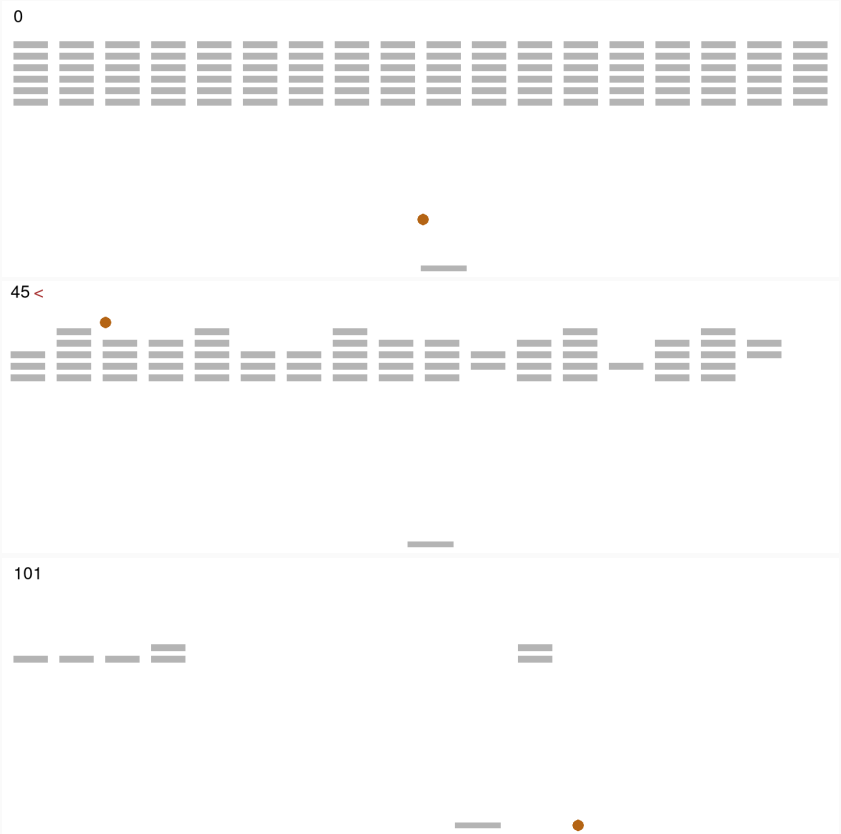
Algorithms.

Experiments

Experiments

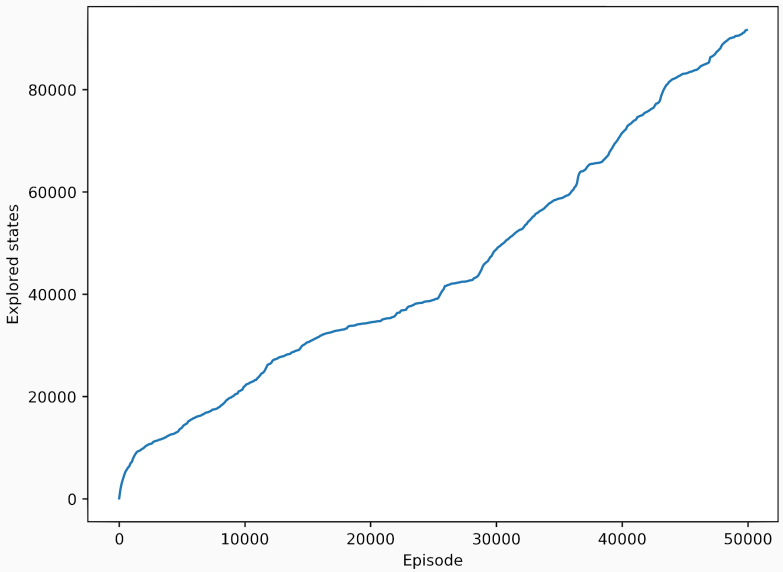
All the experiments.

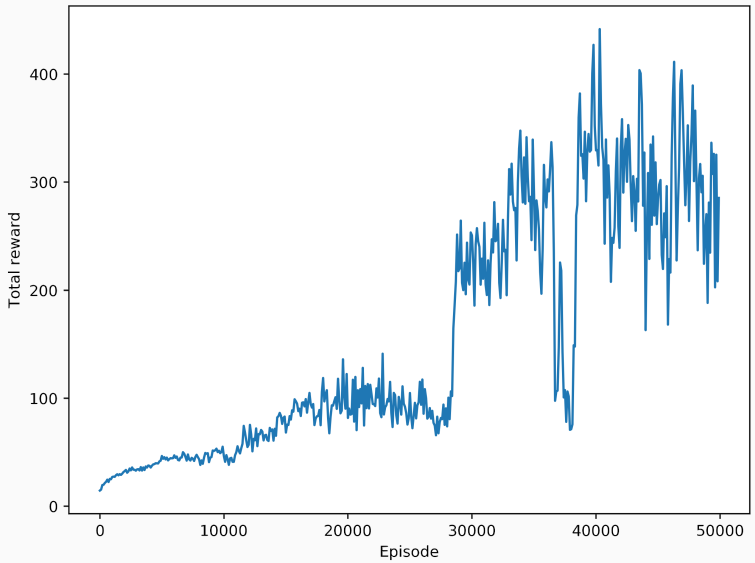
Experiments



Description.

Experiments

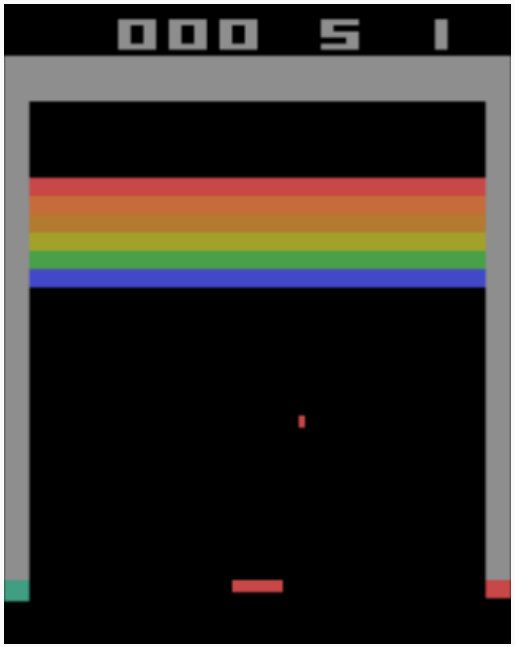


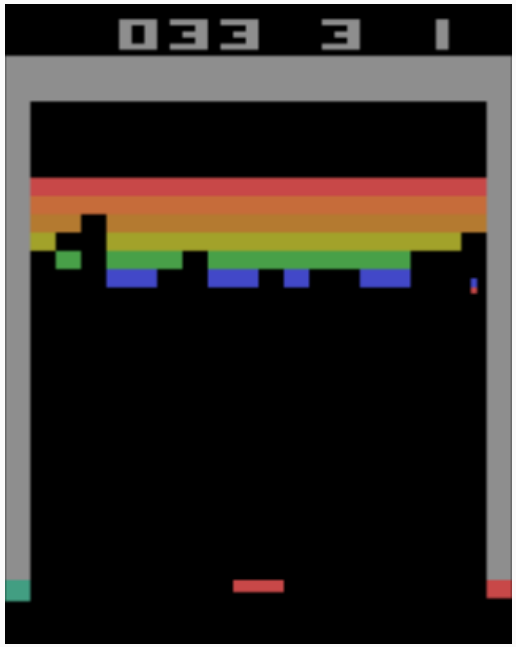


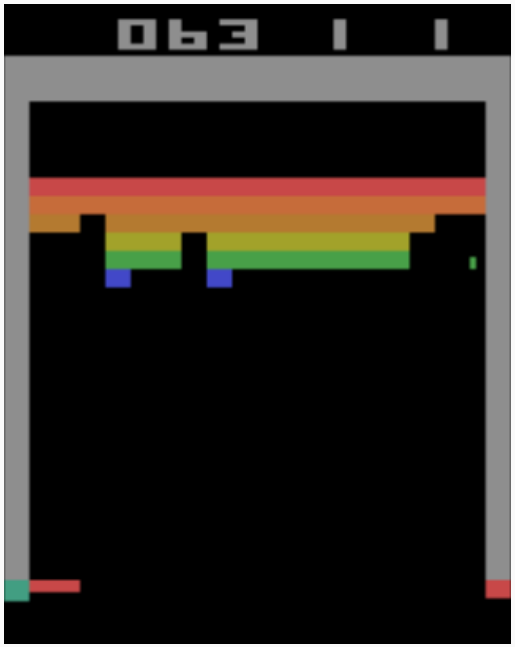
PyGame SARSA.

Experiments

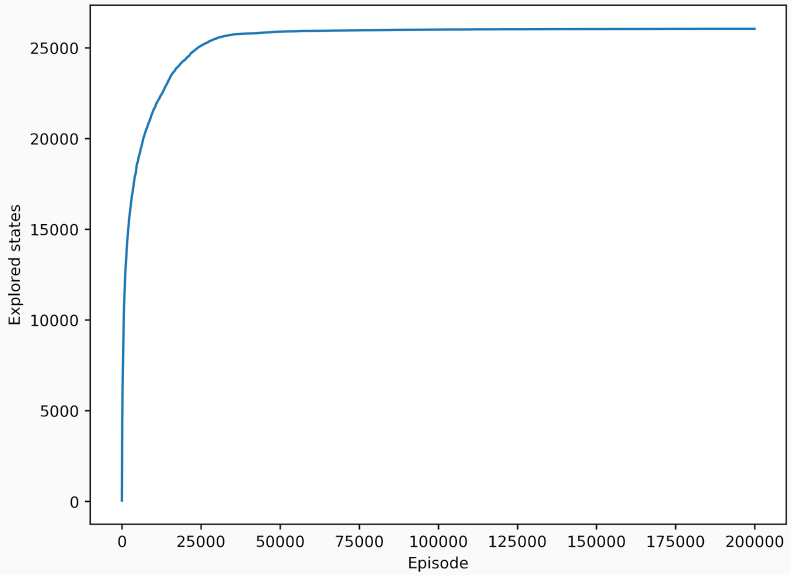
Atari frames.

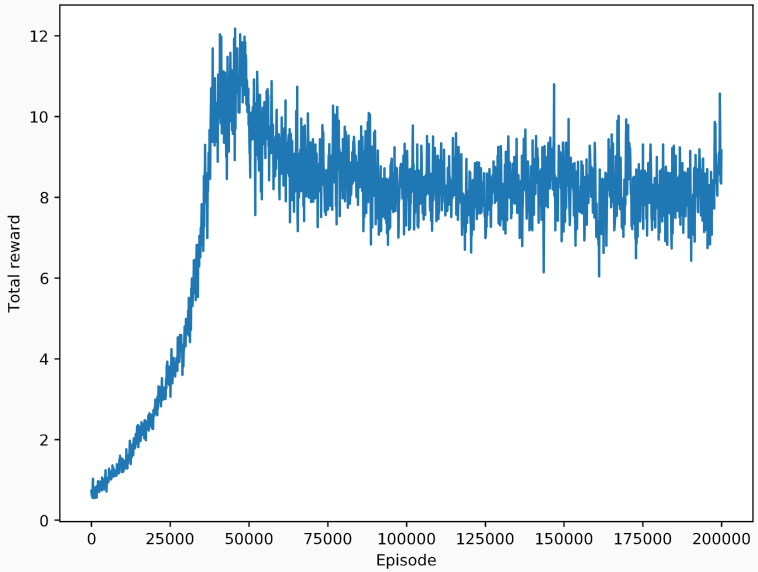






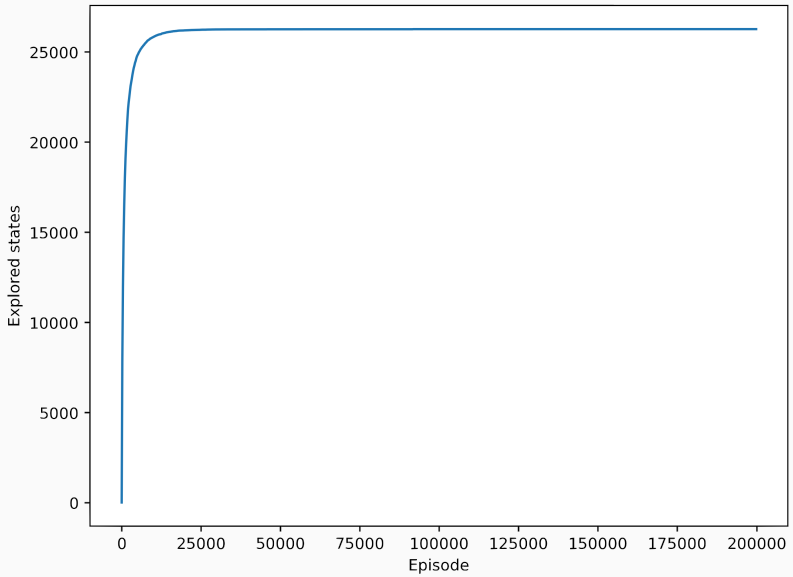
Experiments

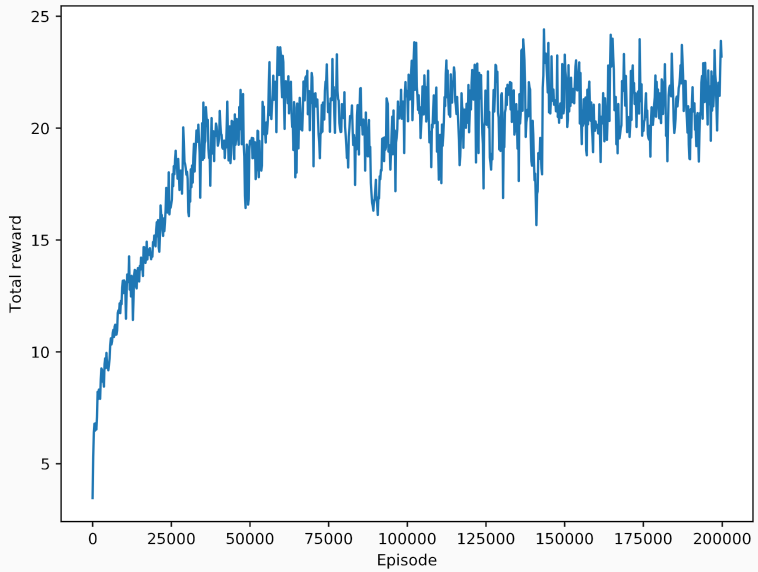




Atari Q-Learning.

Experiments





Atari SARSA.

Conclusion

Conclusion.

Q&A

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