SAPIENZA
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Department of Computer, Control and Management Engineering

Atari Breakout with $\mathbf{LTL}_f/\mathbf{LDL}_f$ Goals

Elective in Artificial Intelligence: Reasoning Robots

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Introduction to the whole project, structure of the report and summary of the work.

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Introduction to RL.

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Q-Learning algorithm.

2.2 SARSA

SARSA algorithm.

3 $\mathbf{LTL}_f/\mathbf{LDL}_f$ Non-Markovian Rewards

Introduction to the research paper and how can it be used to train a RL model.

4 OpenAI Gym

Introduction to the framework.
Examples.

5 ATARI Breakout

Original implementation of the paper (non-ATARI).
ATARI Breakout and differences from the other one.
Results with 6x18 non-ATARI Breakout (+CODE).
Results with our experiments (+CODE).
`RobotFeatureExtractor` (OpenCV).
`GoalFeatureExtractor` (OpenCV).
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$\text{LTL}_f/\text{LDL}_f$ implementation (with Marco Favorito libraries).

6 Conclusion

Why it does not work.
Summary + differences between the two environments.
Future works (neural networks and parallel computation).

References