

# Portfolio Rebalancing with Reinforcement Learning

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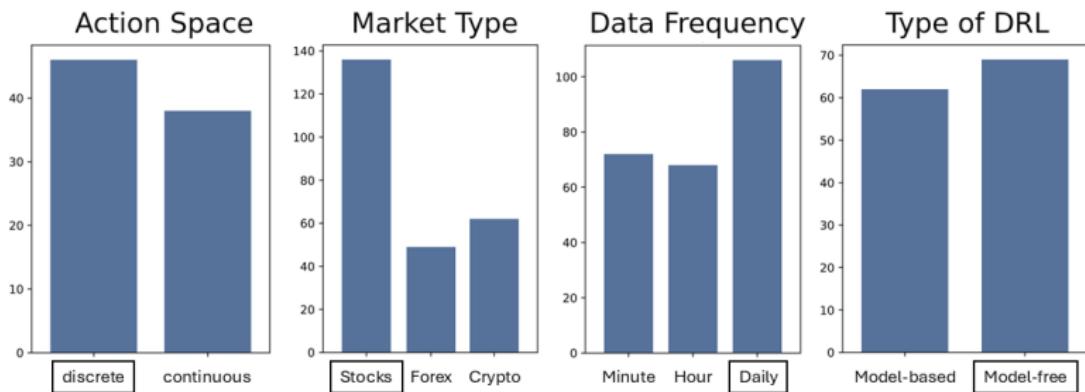
# Outline

Methodology

Results

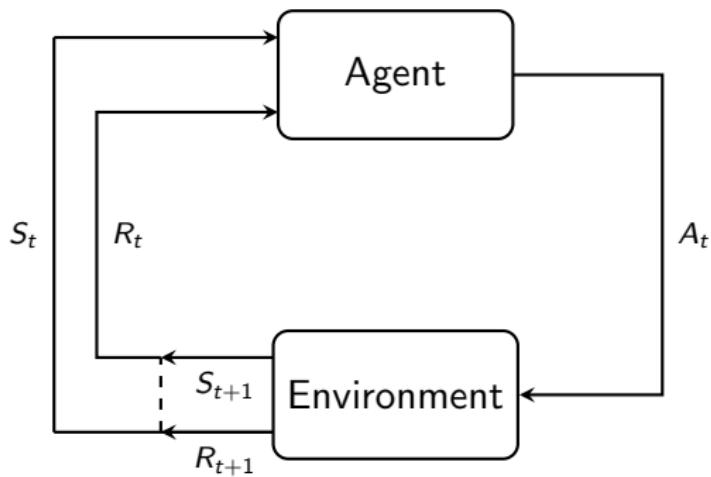
# Literature Overview

# Position of Project within Literature

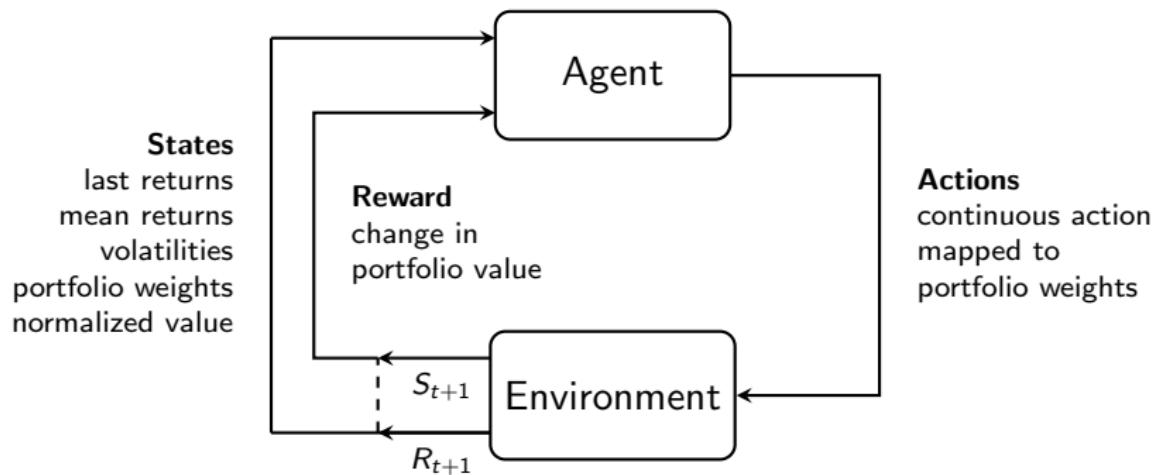


**Figure 1:** Existing literature on using Deep Reinforcement Learning in Trading. Minimally adapted from Millea(2021) for better readability.

## Environment Diagram: General Case



# Environment Diagram: Portfolio Rebalancing



# Model

Text goes in first column.

Text goes in second column

# Results

Table 1: Caption for table one

Heading1	Heading2	Heading3
Row1	0.1	.01
Row2	0.2	.02
Row3	0.3	0.03
Row4	0.4	0.04

# Evaluation

## Conclusion and Outlook

RL performs **profitably, but inconsistently**: inherent to the data, but also due to restrictions in approach

- ▶ **State space:** price predictions, technical indicators
- ▶ **Action space:** more granular weights, more/different assets
- ▶ **Rewards:** transaction costs, risk penalties
- ▶ **Model:** ensemble critics, attention-based networks

## References

-  Lim, Q. Y. E., Cao, Q., and Quek, C. (2022).  
Dynamic portfolio rebalancing through reinforcement learning.  
*Neural Computing and Applications*, 34:7125–7139.
-  Millea, A. (2021).  
Deep reinforcement learning for trading—a critical survey.  
*Data*, 6(11):119.
-  Théate, T. and Ernst, D. (2021).  
An application of deep reinforcement learning to algorithmic trading.  
*Expert Systems with Applications*, 173:114632.