**"به نام خدا"**



گزارش پروژه

**تهیه کنندگان: هلیا وفایی، جواد فرجی، علی خوانین زاده، پارسا احمدی، امیر ایزدی**

استارتاپ استودیو نیوتون

**Q1:**

The current state representation includes six recent log-returns (r\_{k-5} to r\_k), along with normalized time remaining (m\_k) and inventory remaining (i\_k). This is a well-balanced choice:

* The log-returns capture short-term price trends and volatility, helping the agent identify good or bad times to trade.
* The m\_k and i\_k values inform the agent about time pressure and workload, which are essential for strategic planning.
* The state is small enough to be learnable by a neural network, yet informative enough to support complex decision-making.

Adjusting the number of past log-returns (D) could influence performance. Reducing D simplifies the state and may speed up training, but risks making the agent short-sighted.

Increasing D could give better insight into longer trends, but may also introduce noise or slow learning.

The optimal D depends on the volatility and memory patterns in the price data.

Shrinking D (e.g. use 3 returns instead of 6):

✅ Pros:

Smaller state = simpler model = faster learning

Less chance of overfitting

❌ Cons:

May miss price trends or volatility patterns

Agent becomes short-sighted

Expanding D (e.g. use 10 returns):

✅ Pros:

More info on market trends or momentum

Might help agent see longer-term behavior

❌ Cons:

Larger state = more complex = slower learning

Could confuse the agent with irrelevant noise