**GPU Parallelisation of Deep Reinforcement Learning Model for Algorithmic Trading**

**Feasibility Study**

**1. Introduction**

Description of project and the problem we are trying to solve

Brief references to previous work (to set our work in context)

**2. Background and Literature Review**

Breadth of literature rather than depth (i.e., big picture)

Introduce methods/techniques (e.g., algorithmic trading, deep reinforcement learning, GPU parallelisation)

**3. Preliminary Investigations and Findings**

Proof of concept implementation

* run toy example(s) on Cirrus backend/interactive (e.g., run existing/pre-trained model for few hours)
* assess tools (e.g., tensorflow vs pytorch)

Results from experiments

**4. Project Proposal**

State hypothesis to test (e.g., GPU parallelisation will speed up model training vs CPU serial baseline, risk management module prevents large drawdowns)

**4.1 Success Criteria**

Define our minimum viable product

* Architecture diagram (tentative)

Possible extensions to the project (if time permits)

**5. Workplan**

List requirements/milestones and time estimates for each

Visualise timeline of milestones (e.g., Gantt chart)

**6. Resources Estimation**

Estimate resources needed for our work:

• Estimate CPU/GPU hours needed

• Estimate storage needed

• Additional costs inferred?

• Access to data

• Anything else – E.g., does our project need ethical approval or NDA, and what stage are we at with getting relevant approvals?

* Environmental impact (e.g., energy cost of running GPUs)
* Risk to readers (e.g., may try model in live trading)

**7. Risk Analysis**

Mention risks, importance, and control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| **Risk** | **Probability** | **Impact** | **Importance** | **Correction** |
| Cirrus is down | Low | Severe | High | Work on other parts (e.g., report) |
| Dataset not available | Low | Severe | High | Find alternative data, or generate synthetic data |

**8. Outline of the Dissertation Report**

Mention (tentative) chapters in dissertation, with bullet points of what each chapter will entail

1. Introduction

2. Literature Review

3. Methods

4. Experiments

5. Analysis

6. Conclusion

References

Appendix

**References**

[1]

[2]

**Appendix A**