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| Self Assessment Ethics Quiz |  |

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| Student Name:  Wai Cheong Ho | |
| Project title: | |
| A study of Continual Reinforcement Learning in Portfolio Management | |
| Project description: | |
| Comparing the efficacy of Continual Learning strategies on Reinforcement Learning agent in Portfolio Management | |
| Provide a clear statement of your research question(s) or your experimental hypothesis(es). | |
| · How effective is continual reinforcement learning in portfolio management compared to traditional reinforcement learning methods, especially in light of the continuously changing financial market?  · What are the differences in performance, adaptability, and stability when applying various continual learning approaches in reinforcement-based portfolio management? | |
| Briefly explain what you are going to do in your study. Give sufficient detail that a non-expert in the subject can understand what you are proposing to do. | |
| 1.1.1 **Data Collection** · **Historical Financial Data:** Collection of historical market data, including stock prices, and indices over the past decade from Yahoo Finance End-of-day data interface to simulate the continually evolving financial landscape. 1.1.2 **Experimental Setup** · **Baseline Models:** Establish baseline models using traditional reinforcement learning methods, including DQN and PPO. This serves as a comparison point for evaluating the effectiveness of continual learning strategies.  · **Implementation of Continual Learning Models:** Develop reinforcement learning models integrated with various continual learning approaches mentioned in the literature review. 1.1.3 **Evaluation Metrics** · **Portfolio Returns:** Measure the cumulative returns of portfolios managed by each model over the simulation period.  · **Adaptability:** Evaluate how quickly and effectively each model adjusts its strategies in response to significant market shifts.  · **Stability:** Assess the consistency of returns and potential drawdowns to determine the risk profiles associated with each approach. 1.1.4 **Analysis Method** · **Comparative Analysis:** Compare the performance metrics of continual reinforcement learning models against the baseline models.  · **Approach-based Breakdown:** Analyze the results based on each continual learning approach to discern differences in performance, adaptability, and stability. | |
| Section 3: Potential Ethical Issues  Does your project involve any of the following? Please mark Yes or No for all issues. | |
| 1. Human participants (adults or children) | No |
| 1. Human material (e.g. tissue or fluid samples) | No |
| 1. Human data (e.g. surveys and questionnaires on issues such as lifestyle, housing and working environments, attitudes and preferences) | No |
| 1. Vertebrates, especially mammals and birds | No |
| 1. Any other biological organisms (animals, plants etc.) not previously mentioned | No |
| 1. Military or defence context – is this project sponsored/supported by military organisations or contractors? Is a military application one of the goals or sources of information? | No |
| 1. Funding sources or collaboration with potential to adversely affect existing relationships or bring the University or Department into disrepute (e.g. projects related to gambling, dark markets, dark web, etc.) | No |
| 1. Restrictions on publication - does anyone outside the University have the right to approve or veto publication, edit or request changes to the contents of publication or restrict publication of this work in any other way? | No |
| 1. Overseas countries under regimes with poor human rights record or identified as dangerous by the UK Government’s Foreign, Commonwealth Development Office. | No |
| 1. Applications that could potentially involve unethical practice, including potential dual-use applications which could be unethical (e.g. projects involving tools or data that can be used to attack systems or people) | No |
| Instructions for student:  If you answered No to all the above, you do not need to submit further documentation at this time.  If you answered Yes to any of the above, you must complete the Fast-Track Ethical Approval Form, and submit it to the Projects Coordinator or your Project Supervisor, for approval by the Departmental Ethics Officer(s).  The Fast-Track form is designed to verify specific conditions. If certain conditions are not satisfied, the form will guide you to complete a full Ethical Approval Application, to be approved by the Physical Science Ethics Committee. This process can take several weeks to complete.  Section 4: Student Declaration  I have considered the ethical implications of this project and have identified no significant ethical implications requiring an ethics application submission to the Physical Sciences Ethics Committee.  Student Name: \_\_Wai Cheong Ho\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_2nd July, 2024.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |

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| Instructions for Project Supervisor. Satisfy yourself a Fast Track form is not required, then approve this form yourself. Do not forward it to the ethics committee.  Supervisor declaration:  I have checked this form and I understand that completion of this form indicates that from the ethical point of view I am willing to share responsibility for the work being conducted.  Supervisor Name: Farid Bello  Date: 02/07/24 |