A white background with black dots

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**Stage 2 Research Project: 2024 Topic Approval Form**

**Name: Malachi Halliwell Class: 11Wh**

What is your proposed Research Project topic question? *Write the question below.*

How effectively can a machine learning algorithm learn balance a 2d pendulum on a moving cart

What are the main subtopics/aspects of your project? *These can be questions or dot points.*

What is a machine learning algorithm (MLA)

How do I build an MLA that learns a given task effectively

What is the best way to go around developing an MLA and simulation for my specific use case

Build in unity for inbuilt physics simulations, make in python to learn physics sim, start ‌‌

‌ MLA ‌from scratch vs using a premade library

How do I build a 2d pendulum and moving cart simulation in my chosen method

How does an MLA learn to balance a pendulum and how good is it at doing so

How long does an MLA take to learn a simple task/some form of time analysis?

Why did you choose this topic for your Research Project?

I think MLAs are cool and I want to learn more about them/how to apply them

Additionally I want to learn how to program a simple physics simulation

Which Capability/Capabilities will you develop in the Research Project and why? *See Student Guide*

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Describe the main **research processes** you will use in your research project. *You must provide at least 3 types of research that you intend to undertake. You must also be specific – do not just write “I will do an interview/survey/find a mentor” you must be able to identify who you think you will interview/survey/select as a mentor*

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What type is your Research Outcome likely to be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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How will you ensure that your research is ethical? *(“Does no harm” – Think about your own safety, the safety of others, hazards and risks: Think about confidentiality and privacy: Think about plagiarism and referencing: Think about offending others: Think about the nature of your proposed topic)*

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**Topic Approval 2024**

[ ] Topic Approved

[ ] Provisional Approval\*(*Details:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

[ ] Not Approved\* (*Details:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

*\*You will need to resubmit another Topic Approval form*

Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Research Project Teacher)