**Detailed Project Requirements**

**Project Title**

Developing a web-based system to analyse malicious attacks using a Hybrid Machine Learning model

**Client Details**

IoT Training Academy, DFAT and Swinburne University

Dr Siva Chandrasekaran (Director of IoT Training Academy)

**Project Description**

This project is focused on developing a web-based system to analyse malicious attacks using a Hybrid Machine Learning model. It will also predict the cyber-physical systems behavioural analysis. Cyber attackers create and use malware to steal personal and professional details for different reasons.

Despite advancements in network security, timely identification, detection and analysis of malicious activities is still a significant challenge for individuals and organisations. Plenty of useful data could be collated from diverse sources for various potential purposes such as identification, classification and visualisation to improve the efficiency and effectiveness of security protocols.

Problem statement/rationale:

The key problem of this cohort is to look for the right set of useful data, and open-ended applications to develop Hybrid Machine learning Algorithms and develop a web-based system to analyse various malicious attacks. With suitable case-study contexts, your team need to

* Identify and explore various malicious attacks
* Explore publicly available datasets for malware detection
* Design and develop Hybrid machine learning models to identify and analyse malicious attacks.
* Explore and implement different Machine Learning techniques to predict the cyber-physical systems behavioural analysis

Project requirements:

1. Identify and analyse relevant data sets.
2. Explore and develop a range of malware classification and analysis ML models.
3. Explore and implement different techniques to the cyber-physical systems behavioural analysis
4. Build a web-based system to incorporate the above points (1-3).

*The detailed scope of the project will be determined in discussion with the student teams.*

Project Resources

* A Windows PC or Mac computer with internet access will be required.
* The development environment (Mac or Windows) and programming language(s) to be used will depend on the existing skills on the team members and will be chosen in consultation with the Project Supervisors.

Project Planning

Phase 1: Week 1 to week 3

* Team formation and role selection
* Task, document, and project management formation/document creation
* Brainstorming the project objectives and selecting research topics

Phase 2: Week 4 to Week 6

* Develop knowledge on chosen platforms and possible development
* Start designing the prototypes along with your team
* Finalise prototypes and receive feedback

Phase 3: Week 7 to Week 9

* Design and development of the selected prototypes (systems)

Phase 4: Week 10 to week 12

* Testing and evaluation of the implemented systems
* Project presentation and demonstration
* Product delivery

Project Deliverables

All students are expected to deliver the following for evaluation:

* Research report
* Innovation concept
* Team project demonstration and presentation
* Individual project report

Note:

* For a group of 5 members, 5 prototype designs will be initially proposed, out of them 3 best designs (selected by the client) are going to be implemented.
* Likewise, for a group of 4 members, 4 prototype designs will be initially proposed, out of them 3 best designs (selected by the client) are going to be implemented.

**Assignment -1**

**Research Paper Review and Ethics Practices**

**Task 1A: Research Paper Review**

**Due date: 21st March 2025 23:59**

**Mark Allocated: 10% of your final mark.**

**Recommended Word-Count Range: 1500 words.**

**Introduction**

The aim of this task is to demonstrate your ability to find useful resources regarding current research in an area of professional interest to you, as well as your ability to convey information in a written form about those resources and structure a short report along with an Ethics review including referencing. This task also requires you to demonstrate your understanding of research design and methods, and how they have been applied in an area of professional interest to you. Your skills in critiquing and writing about previous work will also be assessed.

The learning outcomes covered by this task include:

* Research the literature and compare viewpoints and arguments, and identify gaps in knowledge-generating innovation concepts on topics in the student's chosen specialisation
* Describe the practices used in real-world research including legal, commercial and ethical frameworks and apply an evidence-based approach to technology innovation on topics in the student's chosen specialisation

**The Task**

Part A - Research the literature and compare viewpoints and arguments, and identify gaps in knowledge-generating innovation concepts on the whole **project**

For this task you will need to investigate current research trends in an area of interest to your project. This could be a broad or narrow area; the area will need to be defined. Try to identify themes or ideas that you come across, for example, are there particular topics that are popular, or is there a key problem that has many different possible solutions? Your report needs to be structured so that someone not familiar with your area of interest can follow it.

For the method review part, you are required to identify and explain the research method(s) that have been applied in the area you are investigating. You will need to reference existing studies that applied such methods, but you will also need to reference at least one textbook that explains how the methods should be designed and executed in practice.

Lastly, you will need to scope your review: do not just include every single idea you come across; develop a proper structure and some questions for your review, and then aim to answer those using acceptable scholarly resources. Please try and avoid using web links and papers that are not peer-reviewed.

This task MUST be completed individually. Try and keep within the word range. Appendices will not be marked. References are not included in the word count.

Part B - Describe the practices used in real-world research including legal, commercial and ethical frameworks and apply an evidence-based approach to technology innovation on the whole **project** (not a small component) in your chosen specialisation (major)

In this assessment, you are required to:

* Read the six core ‘ACS Code of Ethics' and its associated requirements
* Read the ‘ACS Code of Professional Conduct Case Studies’
* Search for a real-life case scenario that aligns with your **project** where there was a dilemma of ethical value in the ICT industry or profession.
* Provide the following information about the incident of interest:
  + Description of the incident (aligns with your project)
  + Must also include references to the sources of information
  + What was the ethical issue?
  + What ICT profession or activity was involved in the incident/project?
  + What ACS code of Ethics and its associated requirements can be applied to a situation similar to your project (major) in this semester? Refer to the ACS Code of Ethics document provided.

**Report Template**

1. PART A

1.1 Introduction

1.2 Literature Review

1.3 Research Methodology

2. PART B

2.1 Case Scenario

2.2 Ethical Dilemma

2.3 ICT Involvement

2.4 Application of the ACS Code of Ethics (in your project/problem)

2.5 Conclusion

References

**Formatting and Referencing Style**

The report should follow these guidelines:

* Table of contents shouldbe included.
* Any standard paper template or structure can be used, such as the IEEE conference paper template (see Attachments below for IEEE template). Be aware that templates will also be assessed on how well you have followed professional recommendations and rules of writing.
* Any standard referencing style can be followed, including IEEE format, Swinburne Harvard or APA styles.
* Your student name and number must be clearly noted on the front page of the report. A word count should be included at the end of the report (before references).

**My Main Idea**

Read the full requirements word by word in detail and understand it, we need to do exactly like that, use and study all the sample literature reviews and ethics report and prime yourself. Then draft me a perfect assignment as per your learning in concrete details and specific use cases. The literature review should refer and study 7-8 well published very recent peer reviewed high quality papers. It should holistically necessary information to converge and analyze the innovative thought which is the unique point of our project that is going to differentiate it from the existing ones in the industry , must stress on this. Compare view points and synthesize clean and neat info to be studied further and implemented . I will also share a fully finished 4000 word research report with a whole bunch of its own references and learning. Learn from that as well as from the internet , cover in a way that it addresses the whole project (Hybrid model , full fledged web app with which the model has to be integrated and malware dateset , its attributes and details about that )and identifies the learning gaps and narrows down to what would then be the next assignment , which is the project brief