The Online Summer Research Programme 2022
Project Feedback

Student register name (informal)	Dylan
Student transcript name (formal)	Runhan Yang
Project title (this will appear on the student's transcript)	Classification of Malware Involving Three Machine Learning Methods Sacrifices Efficiency to Attain Higher Accuracy
Number of hours of supervision	10
Supervisor name	Kieren Nicolas Lovell
Grade awarded (%)	71%
Date and time submitted	31 July 2022 11:56 AM

Brief description of the student's work

Machine learning models have a wide use in almost every field involving computer science. They have a terrific performance on forecasting, classification clustering and de-creasing the dimension, which can all be applied in cybersecurity to protect the safety of sending and downloaded data on personal computers. For example, machine learning algorithms on classification offer a new perspective to defend cybersecurity under the threat of ransomware attacks. The model uses previous data as input and predict whether the testing data is legitimate or not. There are some basic machine learning algorithms. Since they are fundamental methods of machine learning, it is extremely hard to have breakthrough on the logic of basic algorithms to achieve better performance. Meantime, the algorithm with the relatively highest accuracy takes more time to learn from the given data and finish the final classification.

In her paper, she explores a method involving three different single machine learning algorithms are used to present a new way to balance the speed and accuracy of the detection of files in the malware attack. Three methods mentioned above are Logistic Regression, Random Forest, and Deep Neural Networks. Furthermore, three kinds of machine learning algorithms can be replaced by another methods and adding more algorithms is possible to improve the performance of the whole algorithm.

Comments on student's work, including progress over the duration of the programme
Dylan was a pleasure to work with. At the start, was more reserved, but came out of her shell and really reached out and drove the project home. She has a good experience in this area, and a natural interest. I really hope she pursues further academic research within ML, as she has a natural talent