

Instructions for Grantees

This form is designed to help us understand the challenges, triumphs and insights you experienced and gained while running your funded project/program. Please be frank - while we absolutely want to know about and celebrate your successes, it's just important to us that we understand what did not work so well. This will help us to learn what we and others could do differently next time.

You must complete and submit this form no later than the date stipulated in your funding agreement. However, should you not be able to meet the deadline please contact Gertrud to arrange an alternative date. If you fail to do so you may not be eligible to apply for further grants from **InternetNZ**.

The completion of this form should be overseen by someone with an intimate knowledge of the funded project/program.

Mid-project Report

Research Title

Investigating Changes in Phishing Models for Social Networks

This question is read only.

Amount of funding granted from InternetNZ?

\$10,500.00

Must be a dollar amount.

Please provide a short summary of the work that has been completed as part of this project/research

The main aim of this research is to develop a robust spam phishing detection system to investigate how the New Zealand community is affected by spam phishing in social networks. The project is divided into four phases.

We have completed two of the four phases. The main findings are we developed a new unsupervised machine learning algorithm that can detect potential phishing attacks in online social networks. This technique can be used for early detection of potential phishing attacks and does not require pre-existing assumptions about the type of data or understanding of the characteristics of the potential attack. The current accuracy is 87% for the system. We are currently investigating and designing the technique to automatically detect unusual behaviour or changes in online social networks.

Describe the 'who, what, where, when and why' of your initiative

When do you anticipate that your project will be completed?

30/05/2019

Must be a date.

Milestones

What have been the major achievements/steps (i.e. milestones) involved in delivering your project to date?

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Milestone	Description
Phase 1: Initial dataset collection and processing from Twitter API completed. June 2018- Feb 2018 (10 months)	<p>Step 1: Collection of four batches of datasets with ground-truth (annotated instances with class labels for referencing).</p> <p>Step 2: The dataset was collected based on necessary geo-locations.</p> <p>The infrastructure is setup and ongoing data collection is carried out.</p>
Phase 2: Development of unsupervised learning technique for phishing detection completed July 2018- Nov 2019 (4 months)	<p>Step 1: We will investigate suitable approaches to automatically select features to be used for phishing detection.</p> <p>Step 2: We will develop an unsupervised learning technique for phishing detection with a focus on performance in terms of true positive, false positive and false negatives.</p> <p>Step 3: Refine our unsupervised learning technique with a focus on real-time processing and performance.</p> <p>Ongoing refinement of this phase, the fundamentals of the phase has been carried out.</p>
Phase 3: Development of the phishing drift detection technique to monitor the changes of the phishing models. Nov 2018- Current	<p>Step 1: We are currently developing a change detection technique suitable for unsupervised phishing detection based on changes in statistical distribution of incoming data.</p> <p>Step 2: We will evaluate the technique under different scenarios including different types of possible changes focusing on performance in terms of true positive, false positive and false negative.</p>
e.g. planning; major activities; evaluation	

What findings have you made so far?

We have completed the infrastructure for Phase 1. Currently we have collected 221,000 probably tweets that is possible for phishing. This process is still on-going and is on track with the initial milestones.

Phase 2: We have implemented a system that used an unsupervised method based on a supervised classifier. Currently the accuracy of this technique achieves 87% accuracy on our initial experiments containing 4 weeks which is on par with state of the art methods that are supervised. We aim to move this technique a full unsupervised method.

Currently the system is trained on real-time data, thus there are features that are not present such as the tweet's likes. This allows our technique to work well in a real-time environment. Currently the technique uses incremental learning as an intermediary, with

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the aim of this being a stepping stone to transforming the technique into a real-time algorithm.

Phase 3: This phase is not blocked by any of the previous notes and we are beginning this phase.

We are currently started a writing the conference paper for SIGIR, which has a submission deadline of Feb 2019.

What (if anything) did you change in your approach and practices as your project/program/initiative proceeded, and why?

Wernsen Wong, the master student started in July 2018 instead of May 2018. This affected the plan slightly but we are currently on-track for deliverables on the 30/5/2019.

Have not attended netHui 2018, but expect to do so in 2019, when we are closer to the end of the project.

We may use this information to help inform others undertaking similar work

Financial Report

* indicates a required field

Project Income & Expenditure

Please provide details of any project income (funds received) and project expenditure (funds spent) to date.

Use the 'Notes' column to provide any additional information you think we should be aware of.

Income Description	Income Type	Confirmed Funding?	Income Amount (\$)	Notes
InternetNZ	Other Income *	Confirmed *	\$10,500.00 *	Funding from InternetNZ for Masters Student, Consumables, and Travel *

Expenditure Description	Expenditure Type	Expenditure Amount (\$)	Notes
Master's Student Tuition *	Other Expenditure *	\$7,710.00 *	Masters fees for S2, 2018 and S1 2019

Income and Expenditure Totals

Total Income Amount	Total Expenditure Amount	Income - Expenditure
\$10,500.00 This number/amount is calculated.	\$7,710.00 This number/amount is calculated.	\$2,790.00 This number/amount is calculated.

Have you experienced any issues with your intended project budget to date? If so, please explain reasons for any major variances or for providing incomplete information:

Certification and Feedback

Feedback

You are almost at the end of our application process. Before **Submitting** your application, please take a few moments to provide some feedback.

Please indicate how you found the acquittal process:

Very easy Easy Neutral Difficult Very Difficult

How many minutes in total did it take you to complete this form?

40

Estimate in minutes (i.e. 1 hour = 60 minutes)

Please provide us with your suggestions about any improvements and/or additions to this form that you think we need to consider: