IS53012A/B Computer Security
Individual Research Coursework

(as *alternative coursework* for advanced students, or students whose final year project is on Computer Security, or as *additional coursework* for visiting students as appropriate)

Due 17:00, Friday 13 March 2020 week 9, to be submitted to learn.gold.ac.uk, and to be presented in class/workshop on Monday 16 March 2020 week 10.

This coursework is a mini-project type of individual research into one aspect of Computer Security. You are encouraged to persuade one interested topic and conduct an independent and focused investigation on it to enhance your knowledge gained from the lectures. The submission requires an individual report of 2000–5000 words (excluding any Appendix) plus any programming work.

1 Examples of papers

The following research papers may introduce you to some interesting topics or serve as a starting point of your research. Each paper focuses on one topic. Choose *ONE* of the papers only, if interested, for your coursework.

1. Rule-Based On-the-fly Web Spambot Detection Using Action Strings
   Pedram Hayati, Vidyasagar Potdar, Alex Talevski, William F. Smyth

2. Understanding Forgery Properties of Spam Delivery Paths
   Fernando Sanchez Zhenhai Duan Yingfei Dong

3. Study of Trend-Stuffing on Twitter through Text Classification
   Danesh Irani, Steve Webb, Calton Pu Kang Li

4. Exploring the Spam Arms Race to Characterize Spam Evolution
   Pedro H. Calais Guerra Dorgival Guedes Wagner Meira Jr.

5. Detecting Spammers on Twitter
   Fabr'cio Benevenuto, Gabriel Magno, Tiago Rodrigues, and Virg'lio Almeida

6. Image Repurposing for Gifar-Based Attacks
   Smitha Sundareswaran, Anna C Squicciarini

7. Modelling the Security Ecosystem - The Dynamics of (In)Security
   Stefan Frei, Dominik Schatzmann, Bernhard Plattner, Brian Trammell

8. Modeling the Economic Incentives of DDoS Attacks: femtocell case study
   Vicente Segura, Javier Lahuerta

2 General Requirements and Mark Scheme

The coursework will be assessed based on the quality of the following sections in your report up to 5000 words and any auxiliary material for assessment. You are expected to spend around a total of 40 hours for this coursework. The report is required to include at least four sections: namely *Literature Review, Critical Evaluation*, *Original Contribution*, and *Bibliography*. The marks available are in square brackets.

1. Literature Review . . . . [4]

   (a) Problem: Describe the research problem in a recent publication (provided).

   (b) Brief history: Demonstrate how and when the problem was discovered and by whom.

(c) Technical issues in security: Details of technical solutions should be given in this section with update references.

(d) Related Work: Here you should introduce other existing techniques for the same problem as in section 1a.

2. Critical Evaluation .... [8]

(a) The impact of the problems or solutions:

Credits are given to factual data with full updated references.

(b) Technical Strengths and Weaknesses of the published work

3. Original Contribution .... [5]

You should report your own work in this section. You may choose to do a similar original research or verify the approaches of the original work, or to implement part of the system or verify part of the original work.

You need to declare the type of your contribution (Please include this as the first page of your report):

Student Name:		
Paper Title:		
Paper Authors:		
Own Contribution	**Tick**	**Credits**
fixed one weakness		
used an alternative data structure		
implement an algorithm		
found one piece of evidence		
added a mathematical proof		
produced a mathematical model		
corrected a major error		
designed a new algorithm		
produced a demonstration video		
conducted own survey		
Others (please add)		

4. Bibliography .... [3]

3   Note

1. Please give an appropriate reference of this document if you extend or adopt this coursework to your final year project.

2. You should aim to finish a draft of plan for the coursework by week 3, and email/see Ida to make sure that your plan is feasible.

3. If you submit this coursework as an *additional* coursework, e.g. as a visiting student, please attach this coursework to any other main part of your coursework and declare on the top of the cover page "SPECIAL NOTE FOR THE MARKER: This coursework contains an ADDITIONAL part and needs to be marked together with its main part BEFORE [input a date here]."