



Sungkyunkwan University (SKKU) International Summer Semester (ISS) 2019

Using Data Science to Detect Frauds and Fakes

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SHORT COURSE DESCRIPTION

As computer systems and information technologies rapidly advance, various abusive and fraudulent activities in cyber world proliferate. The examples of cyber frauds include spam/phishing emails, malicious virus, fake online reviews, manipulated Like preferences, and fake news. As these fraudulent activities seriously undermine the eco system of entire information systems, it is critically important for students to be aware of popular online frauds in cyber world, and possible mitigations toward the frauds. In this course, therefore, we select a few representative examples of popular modern-type frauds in cyber world, understand the backbone technologies behind those frauds, and study various data-driven solutions toward the detection or prevention of such frauds. Compared to regular security classes, this class focus more on the intersection of data science and security—the so-called data-enabled cybersecurity.

READING MATERIALS

The class does not have a required textbook. All course materials will be drawn from sources available on the Internet. If students are familiar with one programming language (e.g., Java, Python), and a machine learning toolkit (e.g., Weka), it would be helpful.

COURSE REQUIREMENTS AND GRADING

Students undertaking this course will be graded pass/fail, with a pass being a grade of 60 or above out of 100. SKKU regulations require students to attend at least 80% of all classes, and students who fail to meet this requirement will be graded fail. Students found guilty of academic dishonesty will be automatically graded fail. The final mark for the course will be based on the following assessment modes: Class attendance & participation: 10%, Project & presentation: 40%, and Final exam: 50%.

COURSE SCHEDULE

– WEEK I –

Thursday (27 June): Introduction and Overview

Friday (28 June): Weka and basic machine learning skills

– WEEK II –

Monday (1 July): Weka and basic machine learning skills

Tuesday (2 July): Fake News

Wednesday (3 July): Fake News

Thursday (4 July): Project Discussion (Clickbait Detection)

– WEEK III –

Monday (8 July): Junk Science

Tuesday (9 July): Junk Science

Wednesday (10 July): Astroturfing

Thursday (11 July): Astroturfing

– WEEK IV–

Monday (15 July): Social Engineering Attack

Tuesday (16 July): Social Engineering Attack

Wednesday (17 July): Social Engineering Attack

Thursday (18 July): Project presentation

Friday (19 July): Final exam and wrap-up