

**CS 6204 ADVANCED TOPICS IN COMPUTATIONAL SOCIAL SCIENCE
FOR CYBERSECURITY
SPRING 2023**

INSTRUCTOR AND OFFICE HOURS

Instructor: Dr. Jin-Hee Cho (Email: jicho@vt.edu; Room 310 @NVC)

Class Time: TBD

Period: 1/17/2023 – 5/3/2023

Class Mode: Hybrid (Either Physically or Virtually)

COURSE DESCRIPTION

The concept of social cybersecurity has emerged as part of national security that can affect all aspects of future warfare. Social cybersecurity has opened a scientific area that can provide the science to characterize, understand, and forecast cyber-mediated changes in human behavior and social, cultural, and political outcomes (Carley, 2019). Various multidisciplinary network, data, and decision sciences approaches have been taken to solve the so-called social cybersecurity problems. In particular, this course is interested in solving cybersecurity problems using the techniques derived from the points that computer science meets social science with the name of “computational social science.” In this course, we will mainly learn and discuss state-of-the-art computational social science and systems research to solve various cybersecurity problems in online social networks.

This course has the following objectives: (1) Obtain the ability to provide critics to state-of-the-art related research papers; (2) develop one’s own idea to solve a chosen cybersecurity problem that belongs to the area of social cybersecurity; and (3) deliver a technical research paper as a term paper. For high-quality papers, through additional works to polish them, it is highly encouraged to publish the refined term papers in peer-reviewed venues.

PREREQUISITES

To complete an assigned research project, students are expected to have knowledge and understanding of advanced algorithms, including data analytics, machine/deep learning, and programming skills.

TEXTBOOK/REFERENCES: No textbook is required. All state-of-the-art research papers will be shared on the Canvas course website. We may go over two high-quality conference/journal papers per lecture time.

GRADING

- 30%: 10 critics (3% per critic; one critic for two papers covered in one lecture)
- 10%: Participation in discussions
- 10%: Article presentations (The number of presentations will be determined based on the number of the students enrolled)
- 15%: Three project presentations (planning, interim, final briefings) – 5% each
- 35%: A research paper, including a project report and source code

The detailed grading criteria for each assignment will be provided in the beginning of the course.