

CS 6804 Advanced Topics on Game Theoretic Cybersecurity Spring 2021

INSTRUCTOR AND OFFICE HOURS

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

Class Time: TBD

Period: 01/19/2021 - 05/05/2021

Class zoom link: TBD

Office hours for Dr. Cho: TBD or by appointment

Office hour zoom link: TBD

COURSE DESCRIPTION This course will consist of three parts: (1) **Study the fundamentals of game theory:** To provide basic knowledge about game theory, we will go over a game theory text book (described below) for 1-6 lectures and make sure the understanding of knowledge learned via two quizzes; (2) **Learning the state-of-the-art game theoretic cybersecurity research:** We will go over the state-of-the-art research articles on game theoretic cybersecurity and discuss them based on a set of criteria for critiques; and (3) **Writing a research paper:** With the help of the instructor, students will come up with novel research ideas in the area of game theoretic cybersecurity and write a technical research paper. The details of evaluation rubrics will be provided via canvas. If the quality of the research paper is good, we can publish the paper. But this will require additional work to refine the paper.

PREREQUISITES

Students are expected to have: (1) knowledge and understanding in graduate-level algorithms and high-level programming skills to complete given assignments; (2) basic computer and network/cyber security knowledge/understanding; and (3) research skills to complete an assigned research paper.

TEXTBOOK: For the first six classes, we will go over the following textbook:

Steve Tadelis, *Game Theory : An Introduction*. ISBN 978-0-691-12908-2.

RESEARCH ARTICLES: I will post a list of the state-of-the-art articles on game theoretic cybersecurity and make the soft copies available under the FILE of the canvas.

GRADING

- Quizzes: 30%
 - Quiz 1 (timed take-home exam; open-book/note): 15% (L1-L3)
 - Quiz 2 (timed take-home exam; open-book/note): 15% (L4-L6)
- Class attendance and research articles critiques: 10%
- Research articles presentations: 10%
- Research paper: 50%
 - Research idea proposal presentation and written proposal: 5%.
 - Presentation for mid-point check: 5%.
 - Final project presentation: 10%
 - Final project report: 30%