# Cybersecurity and Human Computer Interaction

## Rationale

With our increasing dependence on online services, security and privacy problems present a growing concern. Understanding the interaction between humans and computers is important for computer scientists exploring solutions to these problems. This course covers essential aspects of usable privacy and security principles, methodologies, technologies and user studies carried by researchers in the field.

## Description

HCISec (HCI pertaining to information security) is concerned with improving the usability of security features in end user applications. It is an interdisciplinary topic, which requires understanding of Human-Computer Interaction – how users interact with computer systems -- as well as computer security and privacy. This course provides an introduction to the principles, problems and techniques used in HCISec.

## Topic List

Topics may include but are not limited to:

- Cyber-security and HCI: overview and motivation. Fundamental principles and human behavior in cyber security. Different aspects, such as user factors, usability, tasks context, and cognitive models will be covered.

- Introduction to HCI methods and user studies. Design methodologies, prototyping, usability studies, quantitative and qualitative evaluation, cybersecurity case studies.

- Introduction to Privacy: definitions, laws, policies, right to be forgotten. User right to control personal information. Privacy laws in the US vs. EU will be covered.

- Introduction to Computer Security: Fundamental Concepts. Malicious software, security models, applications security. Interdisciplinary aspects relating to computer security.

- Web browser security and privacy. How does browser technology affect user privacy? Implications and existing defenses.

- Secure Interaction Design: guidelines for interface design. Protecting legitimate users from threats, such as viruses, spyware, phishing, as well as personal/confidential information leakage

- Human behavior in authentication and access control. What is usable authentication? Different authentication mechanisms, biometrics, two-factor authentication.

# Learning Goals

The student must be able to demonstrate knowledge of the principles and methods of HCISec, including online attacks and threats, secure user interaction design, trust and privacy.

# Assessment

Written exams and course projects will be assigned.

### *Homework:*

Homework solutions must be legible; Difficult-to-read solutions may be marked off, or may not be graded entirely. Typing homework is recommended. **No late homework accepted.**

### *Project:*

There will be a class project. Late project submissions (up to 72 hours late) will be penalized (by up to 40% of grade).

### *Exams:*

There will be a midterm and a final exam.

### *Class Grading:*

**Grading** = Homework (15%) + Project (25%) + Attendance & Participation (10%) + Midterm (25%) + Final (25%)