

Contract for Independent Studies (CS 4371 or CS 5391)

Student Full Name: Cody Filby
Student ID: 80681410
Instructor: Bhanukiran Gurijala
Semester/Term: Summer 2023
CRN: 30437

Topic

1. General topic of the independent study.

The independent study will be based on exploring the security-related issues in IoT, in particular, security issues in drones.

2. Detailed description of the independent study.

The independent study will involve doing a systematic and thorough literature review of the current state-of-the-art of drone security and open security concerns. It will also involve launching selected attacks on drones and then implementing one or more countermeasures against the attacks and documenting the findings.

Objectives and Deliverables

The following are the set of objectives for the independent study:

- Acquire knowledge about the importance of security concerns in IoT devices, in particular, drones by reviewing about 20 – 25 identified peer reviewed articles.
- Acquire knowledge about the security concerns related to drones by reviewing about 20 – 25 identified peer reviewed articles.
- Experiment how attacks are launched on drones for at least 2 selected major security attacks.
- Apply at least two countermeasures for each of the selected attacks on drones.
- Explain and document the impact of countermeasures based on the experiments conducted.

The following are the set of deliverables for the independent study:

- Motivation/Problem statement/Rationale for the independent study.
- Literature review report.
- Report summarizing the experimental setup to launch attacks, implementing countermeasures, their performance, and learnings.
- Technical report and/or publishable paper merging all deliverables.

By the end of the independent study, the student will be able to:

- Acquire knowledge about the importance of security concerns in IoT devices, in particular, drones by reviewing about 20 – 25 identified peer reviewed articles.
- Acquire knowledge about the security concerns related to drones by reviewing about 20 – 25 identified peer reviewed articles.
- Experiment how attacks are launched on drones for at least 2 selected major security attacks.
- Apply at least two countermeasures for each of the selected attacks on drones.
- Explain and document the impact of countermeasures based on the experiments conducted.

By the end of the independent study, the student will deliver the following:

- Motivation/Problem statement/Rationale for the independent study.
- A detailed literature review/survey of the current state-of-the-art of drone security.
- A detailed report summarizing the experimental setup to launch attacks, how implemented countermeasures performed, and learnings.
- A technical report and/or a publishable paper depending on the results.

Deadlines

- Draft Motivation/Problem statement/Rationale for the independent study after reviewing at least half of the identified peer-reviewed articles, end of week 1, 6/16/2023.
- Final Motivation/Problem statement/Rationale for the independent study after reviewing all other identified peer-reviewed articles, end of week 2, 6/23/2023.
- Draft Literature review report after reviewing at least half of the identified peer-reviewed articles, end of week 2, 6/23/2023.
- Final Literature review report after reviewing all other identified peer-reviewed articles, end of week 3, 6/30/2023.
- Draft Experimental Report after launching at least one selected attack, end of week 4, 7/7/2023.
- Draft Experimental Report after applying countermeasures for the selected attack, end of week 5, 7/14/2023.
- Draft Experimental Report after launching other selected attack, end of week 6, 7/21/2023.
- Draft Experimental Report after applying countermeasures for the other selected attack, end of week 7, 7/28/2023.
- Final Experimental Report, early week 8, 7/31/2023.
- Draft Technical report and/or publishable paper, end of week 8, 8/4/2023.
- Final Technical report and/or publishable paper by the end of semester, 8/8/2023.

Conditions

- The student is required to meet with his advisor at least once every week to discuss and share progress.
- The student is required to share the draft version of the deliverables being worked on during the meetings.

Grading

Grade	Criteria
F	The student did not meet any objective and did not complete the deliverables.
D	The student did not meet objectives 3 and 4. Other than that, the student has met all other objectives and completed deliverables for the objectives met according to the deadlines. This means none of the attacks were launched and missing implementation of their countermeasures.
C	The student did not meet objective 4. Other than that, the student has met all other objectives and completed deliverables for the objectives met according to the deadlines. This means, only attacks (one or two) were launched but missing implementation of any countermeasures.
B	The student has partially met all objectives and partially completed all deliverables according to the deadlines. This means, the student was able to launch only one attack and its corresponding countermeasures.
A	The student has met all objectives and completed all deliverables according to the deadlines.

Cody Filby

Student's Signature

Bhanukiran Gurijala

Instructor's Signature

Chair's (Graduate Advisor's) Signature

Date