2 Project Plan

2.1 PROJECT MANAGEMENT/TRACKING PROCEDURES

Which of agile, waterfall or waterfall+agile project management style are you adopting. Justify it with respect to the project goals.

- **We are using Scrum as our project management style. Project managers using this style should clearly explain responsibilities and roles to team members, and foster ongoing communication between all members of the team.**
- **Scrum is done by prioritizing the work that matters most and breaking it down into manageable chunks. It also requires ongoing collaboration and communication both with the people who are doing the work and the people who need the work done**
- **This applies perfectly with our project as we are periodically communicating with CDC staff and our adviser to implement different parts of our project based on highest priority at the current time.**

What will your group use to track progress throughout the course of this and the next semester. This could include Git, Github, Trello, Slack or any other tools helpful in project management.

We shall use Gitlab to keep track of everything because GitLab allows us to keep track of process, version history, etc.

2.2 TASK DECOMPOSITION

- **Configure last year's VM**
  - **Understand how it works by following their documentation**
  - **Package for potential users**
- **Create an additional VM**
  - **Select device to emulate**
  - **Create VM of device**
  - **Add vulnerabilities**
  - **Package for potential users**
- **Modify a physical device**
  - **Research vulnerable devices**
  - **Create spreadsheet listing details of potential devices**
  - **Select "best" device**
  - **Configure for CDC**
- **Work with last years Physical Device**
  - **Perform demo replicating last year's group**
  - **Integrate it into the CDC**
  - **Create new documentation**
- **Create a bundleable/downloadable package**

○ **Either a downloadable package in VirtualBox or in ISERink**

2.3 PROJECT PROPOSED MILESTONES, METRICS, AND EVALUATION CRITERIA

What are some key milestones in your proposed project? It may be helpful to develop these milestones for each task and subtask from 2.2. How do you measure progress on a given task? These metrics, preferably quantifiable, should be developed for each task. The milestones should be stated in terms of these metrics: Machine learning algorithm XYZ will classify with 80% accuracy; the pattern recognition logic on FPGA will recognize a pattern every 1 ms (at 1K patterns/sec throughput). ML accuracy target might go up to 90% from 80%.

In an agile development process, these milestones can be refined with successive iterations/sprints (perhaps a subset of your requirements applicable to those sprint).
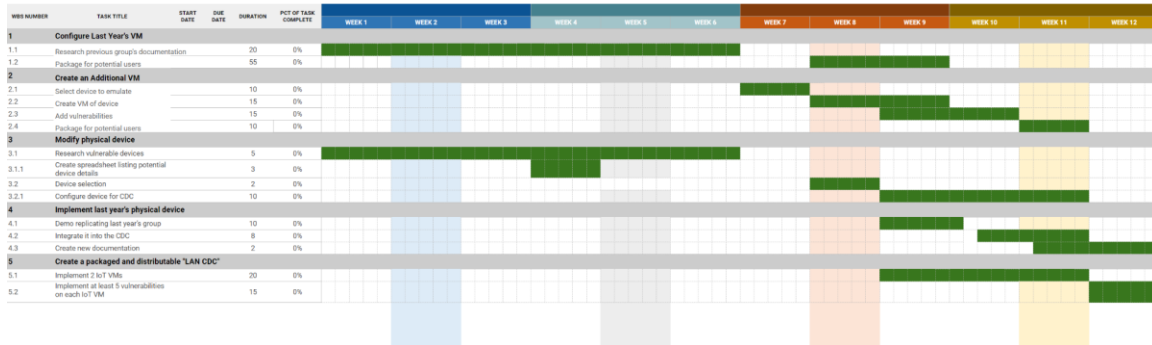
- **Get the previous team's virtual camera functioning and accessible on each team member's machine.**
    - **Each member has a persistent file system working on their virtual machine.**
- **Integrate previous team's virtual camera IoT device into CDC.**
- **Have a virtual LAN CDC implemented with 2 IoT devices.**
    - **Virtual Iot boots in less than 5 minutes.**
    - **Implement at least 5 vulnerabilities on each IoT VM.**
- **For each Vulnerability we implement, we shall also script an exploit to take advantage of the vulnerability. This will ensure the red team can be automated in case teams need to substitute automation for volunteer professional penetration testers.**
- **If a lightweight program is selected, have it be runnable on non-high end computers.**

2.4 PROJECT TIMELINE/SCHEDULE

• A realistic, well-planned schedule is an essential component of every well-planned project

• Most scheduling errors occur as the result of either not properly identifying all of the necessary activities (tasks and/or subtasks) or not properly estimating the amount of effort required to correctly complete the activity

• A detailed schedule is needed as a part of the plan:

– Start with a Gantt chart showing the tasks (that you developed in 2.2) and associated subtasks versus the proposed project calendar. The Gantt chart shall be referenced and summarized in the text.

– Annotate the Gantt chart with when each project deliverable will be delivered

• Project schedule/Gantt chart can be adapted to Agile or Waterfall development model. For agile, a sprint schedule with specific technical milestones/requirements/targets will work.

IoT Gantt Chart

| PROJECT TITLE | Development of IoT Components for CDC | COMPANY NAME | 491 sdmay22-14 |
| PROJECT MANAGER | Jake Martin | DATE | 10/6/21 |

WBS NUMBER	TASK TITLE	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE
1	**Configure Last Year's VM**				
1.1	Research previous group's documentation			20	0%
1.2	Package for potential users			55	0%
2	**Create an Additional VM**				
2.1	Select device to emulate			10	0%
2.2	Create VM of device			15	0%
2.3	Add vulnerabilities			15	0%
2.4	Package for potential users			10	0%
3	**Modify physical device**				
3.1	Research vulnerable devices			5	0%
3.1.1	Create spreadsheet listing potential device details			3	0%
3.2	Device selection			2	0%
3.2.1	Configure device for CDC			10	0%
4	**Implement last year's physical device**				
4.1	Demo replicating last year's group			10	0%
4.2	Integrate it into the CDC			8	0%
4.3	Create new documentation			2	0%
5	**Create a packaged and distributable "LAN CDC"**				
5.1	Implement 2 IoT VMs			20	0%
5.2	Implement at least 5 vulnerabilities on each IoT VM			15	0%

2.5 RISKS AND RISK MANAGEMENT/MITIGATION

Consider for each task what risks exist (certain performance target may not be met; certain tool may not work as expected) and assign an educated guess of probability for that risk. For any risk factor with a probability exceeding 0.5, develop a risk mitigation plan. Can you eliminate that task and add another task or set of tasks that might cost more? Can you buy something off-the-shelf from the market to achieve that functionality? Can you try an alternative tool, technology, algorithm, or board?

Agile project can associate risks and risk mitigation with each sprint. The risk of not getting last year's project to work is greater than 0.5. Therefore, in the event we are unable to make last year's project functional, we shall perform one of the following tasks:

1. **We shall develop a completely unrelated IoT device in replacement for their inoperable deliverable.**
2. **We shall develop another device which emulates last year's functionality and vulnerabilities.**
3. **We shall document our failed efforts in getting last year's materials to work for the next team to succeed us.**

The risk of not integrating our physical IoT device into ISEAGE is greater than 0.5. Therefore, in the event we fail to integrating our physical IoT device into ISEAGE, we shall perform one of the following tasks:

1. **We shall thoroughly document our efforts and processes so that next year's team is supplied with enough resources to see their success**
2. **We shall default to producing a Virtual VM that emulates a physical IoT device**

2.6 PERSONNEL EFFORT REQUIREMENTS

Include a detailed estimate in the form of a table accompanied by a textual reference and explanation. This estimate shall be done on a task-by-task basis and should be the projected effort in total number of person-hours required to perform the task.

TASK	PROJECTED EFFORT (in PersonHours)
Integrate Last Year's VM into the Spring CDC	75
Integrate Our New VM into the Spring CDC	50
Work with last year Physical IoT Device	20
Develop a new Physical IoT Device	20
Develop a DownloadableCDC	35

2.7 OTHER RESOURCE REQUIREMENTS

Identify the other resources aside from financial (such as parts and materials) required to complete the project.

Physical IoT device to be purchased

Old team's physical IoT device

If ISERink is selected, have a computer with: 6 network cards, 300GB of disk space, 24GB of RAM, and dual quad-core processors || OR || Gain access to a select portion of ISELAB

If lightweight program is selected, computer specs may be much less