ppendix 5.2

# [Visual IoT Network for Environment Protection and Disaster Prevention] [Traveling to Field Test Sites] Report Form

## I. Proposer:

| Name: | Dr. Thin Lai Lai Thein |
|---|---|
| Position: | Professor |
| Institution: | UCSY |

## II. Objective:

This field experiment aims to develop an image-based dataset for the training, validation and testing of forest smoke/fire detection models in Nay Pyi Taw (NPT), Myanmar.

## III. Schedule:

| Date | Location | Work | Person in charge |
|---|---|---|---|
| 6 Nov 2023 | NPT | Surveying the field site areas | UCSY team and local government staffs |
| 7 Nov 202 | NPT | Experiment at Office No.11 | UCSY team and local government staffs |
| 8 Nov 2023 | NPT | Experiment at UEC | UCSY team and local government staffs |
| 9 Nov 2023 | NPT | Experiment at Thuka mein | UCSY team and local government staffs |
| 10 Nov 2023 | NPT | Meeting for experimental summary | UCSY team and local government staffs |

## IV. Participants:

| No. | Name | Organization |
|---|---|---|
| 1 | Dr. Thin Lai Lai Thein | UCSY |
| 2 | Mr. Nay Win Aung | UCSY |
| 3 | Mr. Ye Naing | UCSY |
| 4 | Ms. Theint Theint | UCSY |
| 5 | Government staffs | NPT |

## V. Summary of the activities corresponding to the objectives

In Myanmar, forest fire hotspots are mainly found in the State of Kayah, Shan, Bago, Naypyitaw, Magway, Mandalay, Chin, and Kayin. According to the current political

situation of our country, Nay Pyi Taw is safe compared to other parts of Myanmar. Forest fires also burn every year. This is the reason for choosing Naypyitaw.
It will be useful for training the camera installed and capturing the fire/smoke images and creating the dataset.

The activity is crucial to this project's objective since the model's performance depends upon the quality and quantity of the dataset.

Three experimental areas include

- Office 11 (lat 19°48'37.15", long 96° 7'43.27")

- UEC office area (lat 19.8370015, long 96.1305619)

- Thukamein Roadside (lat 19.7973553, long 96.1167706) as shown in Figure 1.
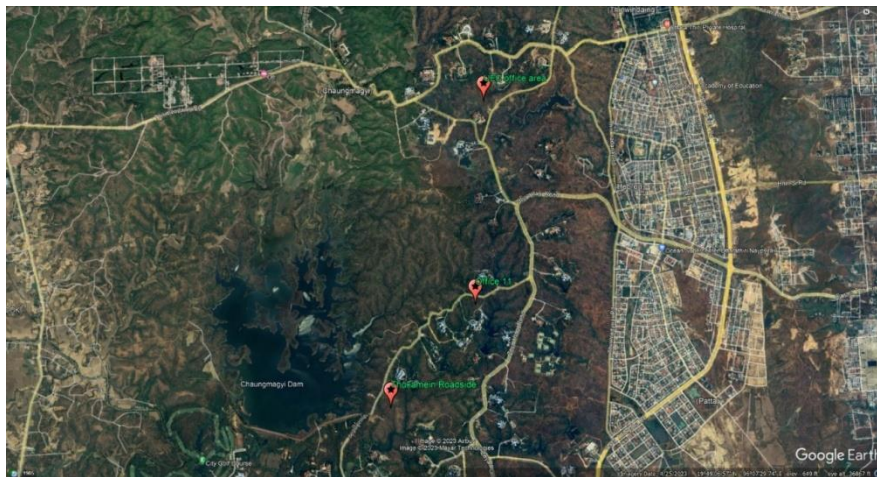


Figure 1: Three experimental areas.

The procedural activities to be done in each area are summarized as follows. Firstly, the UCSY team members responsible for setting fire or generating artificial smoke are ready at a planned and designated position (called a fire spot) in a given area. They will make smoke for approximately one hour for one fire spot. Starting from the time when smoke generation is initialized, four cameramen, including one at the forest areas in testing site, are ready to take photos (snapshot and video) from before the appearance of smoke until it dies out due to the extinguishment performed by the UCSY team. Once smoke/fire is set, the camera persons will take photos from different viewpoints simultaneously to maximize this operation's advantage. Pictures from different perspectives are critical in model training in the sense that some biases can be reduced. Consequently, the model's performance can be improved. Then, the UCSY team members will move to the following designated spot and repeat the procedure. In total, 19 fire spots are planned for the dataset construction, six or seven for each area. At each site, images will simultaneously be captured from four different viewpoints. Therefore, as the cameramen, at least four people are required for this operation. And one or two will be operation coordinators, including staff from the local government

offices.

The fire spots in all areas are illustrated in the figures below. Note that the shadowed areas are the areas that actual forest fires occurred repeatedly in the past. And the positions marked inside each shadowed area are the positions that the local government officers will set fire or generate smoke for the experiment. The positions marked outside the shadowed areas are the positions of the experimenters who will take photos
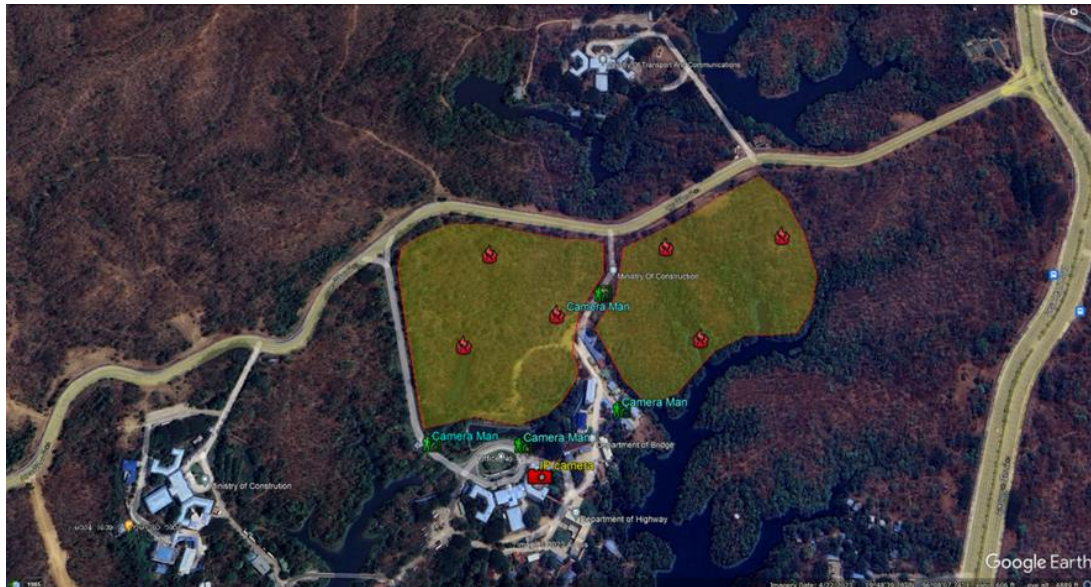

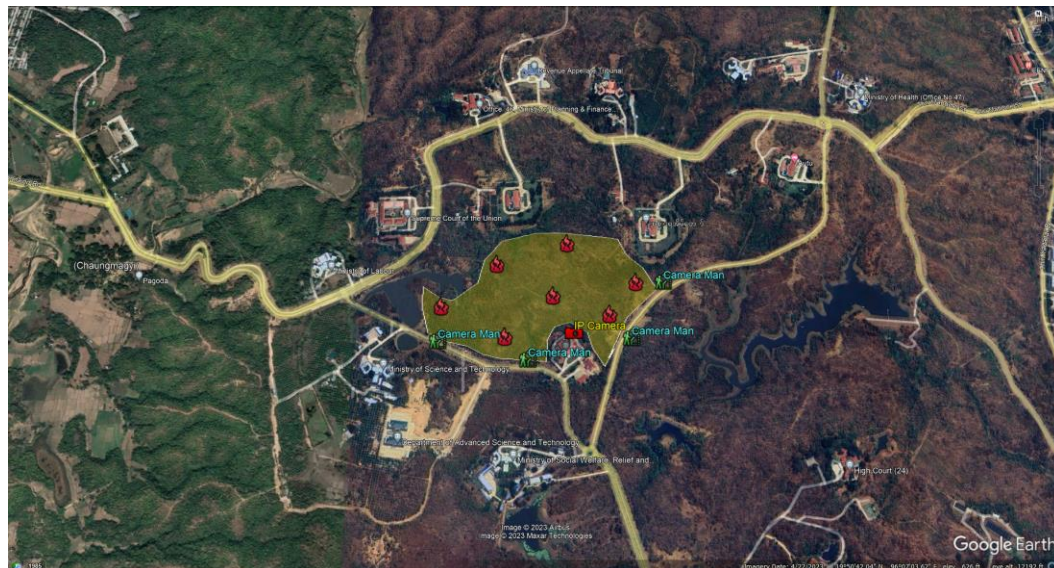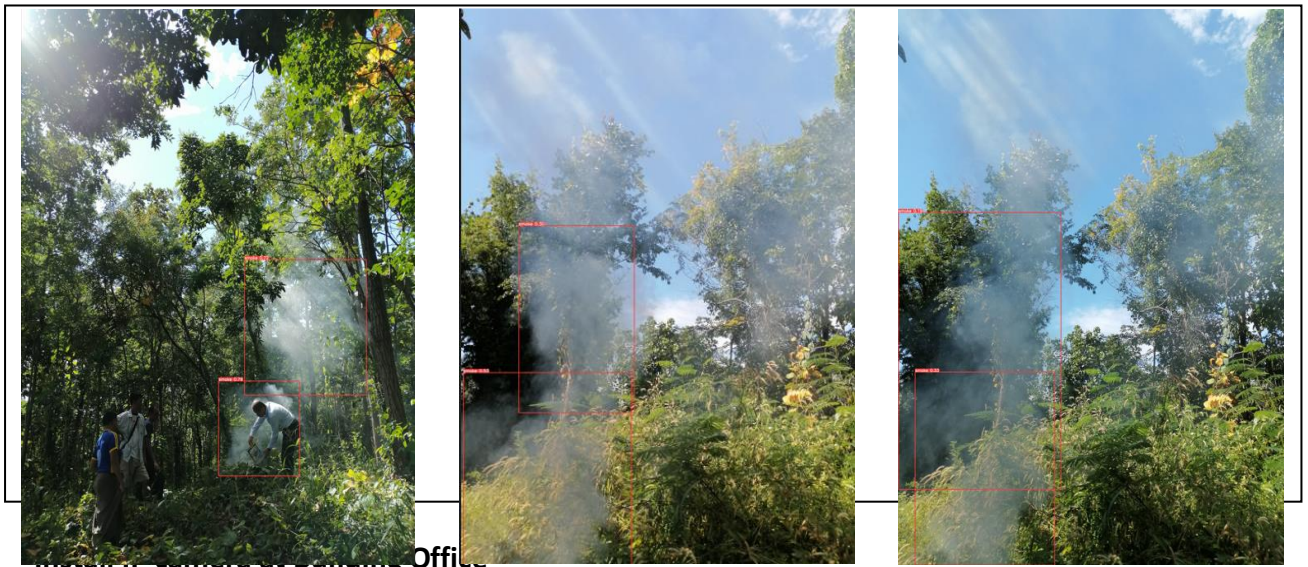Figure 2: Fire spots and positions of the cameramen in Office 11.


Figure 3: Fire spots and positions of the cameramen in UEC office area.

Figure 4: Fire spots and positions of the cameramen in Thukamein Roadside.

## V. Others
**Smoke Dataset**



Install IP camera at Building Office

## IP Camera Location



## No.1 IP Camera (Nay Pyi Taw – UCSY)

## Sample Photos of field experiments at Naypyitaw