

Unstable Bluff Detection System Requirement Specification

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1 Introduction and Overview

The following will be used to describe The Unstable Bluff Detection System. The Unstable Bluff Detection System's purpose will be to detect bluffs in the Del Mar Area for their stability. Unstable bluffs are known to cause damages such as causing rocks to fall on cars, trains, or even people hence why this system running well and timely is so fundamental. Thus the main purpose of this system is safety. The system will work by tracking tourists in a 300-foot range as well as the bluffs. When the bluffs are recorded to be unstable authorities will be alerted. Ultimately, this system will blend in with the environment and will not disturb the tourists or tracks in the area of the bluffs.

2 User Requirements

The system's main functions will be executed through the cameras. In the 300-foot bluff zone, there will be cameras standing on metal poles capturing 50 by 50-foot partial images of the bluff. These 32-bit, timestamped images will then be sent in hourly increments to the off-sight local facility, the main user of this system. The Unstable Bluff Detection System should then allow the facility to send alerts and alarms to operators and lifeguards in the area when the bluffs hit level 4 or 5. These operators and lifeguards are the only other users of this system therefore, they should be able to receive these messages and alarms.

3 System Requirements

3.1 Functional Requirements

Now knowing the overview and the main users of this system, these functional requirements will list what this system needs to do. This system will monitor about 300-foot ranges of the bluffs by using 6 cameras placed onto poles along the area. These cameras will be able to capture a 50 50 foot area to fully capture the total 300 feet. The image captured will be sent to a local facility hourly where the images will be stored with time and level data for the bluff. This system also has a severity rating where 0 is safe, 1-3 is considered a potential rockslide, 4-5 is a significant change

where alarms go off and the Amtrak rail operators and lifeguards are alerted to block the roads and evacuate the people. The facility will then check the footage to see if any people were left behind. In normal conditions, it is imperative that the system is still sending these images to the facility so they can be accessed and examined. The bluff must be monitored 24/7 by the system showing accurate readings of the levels as well as sending out alerts only when necessary.

Use Cases:

In a normal use case, the cameras and trackers record 24/7. If an unstable bluff of Level 4 or 5 occurs it will offset the alert and alert the authorities. Or in the case of no bluffs, no response will be given if it never hits level 4. If in the case the alarm goes off when it is unnecessary the authorities will confirm a false alarm and the system will be revised for the magnitude that alerts a level 4. In the cases, the camera fails the local facility will be alerted. Overall, in the case of false alarms, it is more important to be overly safe than sorry, and have the authorities confirm the safety of the bluff first.

3.2 Non-functional Requirements

The Cameras:

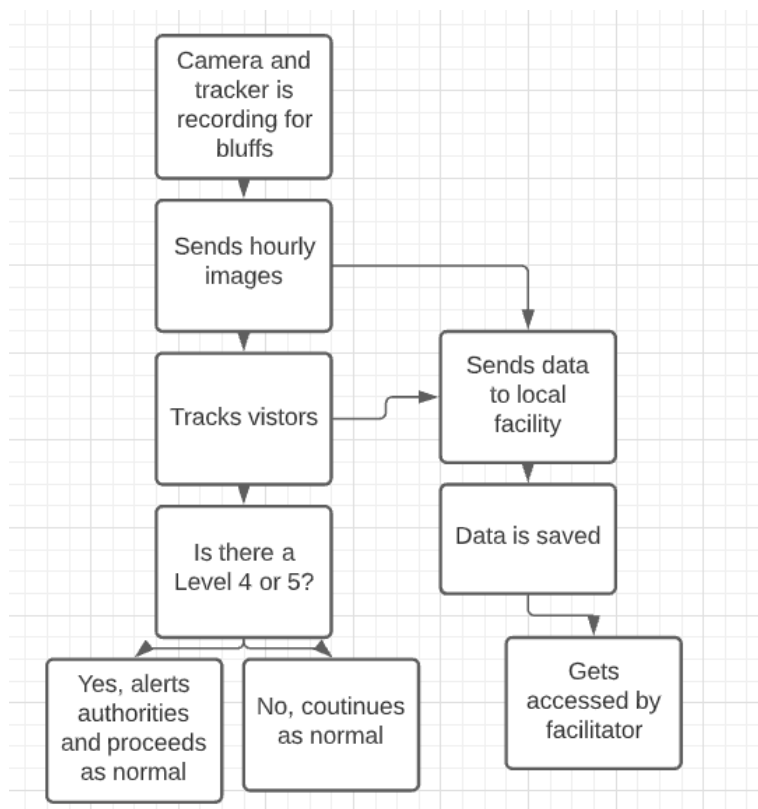
- The Cameras need to be 24/7 and hourly move 32 bit and time stamps will be sent from the cameras to an off-sight local facility.
- Cameras will sit on polls.
- These images need to be 4000 pixels per square bit and 8 bits per pixel. The images should be available in color and greyscale. Additionally, the bluff along with the edge and 300 ft of the surrounding area should be pictured.

Off Sight Facility:

- Needs to be an off-sight facility with lots of memory on hand to save all the information.

Alert:

- Should send fast and correct alerts.
- Needs to be 24/7.



4 Other

This section (or following subsections) contains any relevant information not covered in any previous section. Examples include risks, constraints, assumptions (not already identified), and potential future changes.

- Alerts need to be correct and sent to everyone in the area, not just safety personal
- Images need to be adaptable to time of day, i.e. night mode versus day mode.
- Needs to not disturb visitors, tracks, or safety measures.
- Should ensure that alerts have the right information to set off for each level.