**Project Requirements**

Mission Requirements

* The device shall capture an image and process it in real time using Mat lab to track the desired target

Operational Requirements

Input/output Requirements

* The device shall capture an image through a wireless/wired camera and send the image to the computer
* The device shall be attached to a servo motor or a 2-axis controller mount that shall be operated through the Arduino kit.
* The computer/display shall send out a signal giving the correct position of the target to the Arduino chip
* The Arduino chip shall convert the signal received from the computer to move the motor/controller to the correct position

External

* The device shall receive power directly from an external source (if wireless) or it shall receive power directly from the computer through an USB cord.

Functional Requirements

* The device shall use image processing to track the desired target
* The device shall filter out the image using Matlab computer vision system toolbox and Simulink.
* The device shall track the target and move accordingly.
* The device shall track the target instantly. In the real world, timing is crucial for security.
* The device shall track the target in different environments (i.e. During nighttime/sunlight)

Technology and System-wide Requirements

* The device shall have a low-power consumption
* The device should have a low cost
* The responsiveness of the device shall be accurate and fast
* If possible, the device should have a good resolution