ANTI – BALLISTIC MISSILE SYSTEM

ABSTRACT

The concept for this senior project was essentially to create a miniature version of an antiaircraft gun designed to launch a miniature "missile" at an airborne projectile, hitting it mid air. To accomplish this task required the design, construction, and connecting of two systems: a tracking system and a projectile launching system. Each of the processes for both systems will be described in depth in later sections of this report, but at its core the anti-aircraft system I created focused on producing a projectile tracking system capable of detecting an airborne object, determining the path of its motion, and extrapolating its path through time to give the launching mechanism coordinates for when and where to fire its "anti-ballistic missile." The motion tracking system was created using an IP-cam and ultrasonic sensor. The video capture and processing to determine motion and calculate a flight path. The ABM launching system was based around a cracker Fire strike firing a mini launcher whose launch angle and trigger were controlled by two Parallax continuous rotation servo motors. Based on information from the IP-cam, the Processing code was able to send information to an external Arduino Uno board which controlled the two servo motors to launch the launcher at a given angle at a given time. Processing was chosen to do the programming in because of its versatility and compatibility with external devices.

BLOCK DIAGRAM