Portland State Aerospace Society

RocketTracks

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PROBLEM

What good is a high tech rocket if you can't track it? Current methods of tracking are limited by dependence on human eye.

Rockets move fast. Keeping antennas and cameras pointed at them is hard.

RocketTracks was originally conceptualized in 2011 as a mechanical structure that uses a manual control box.

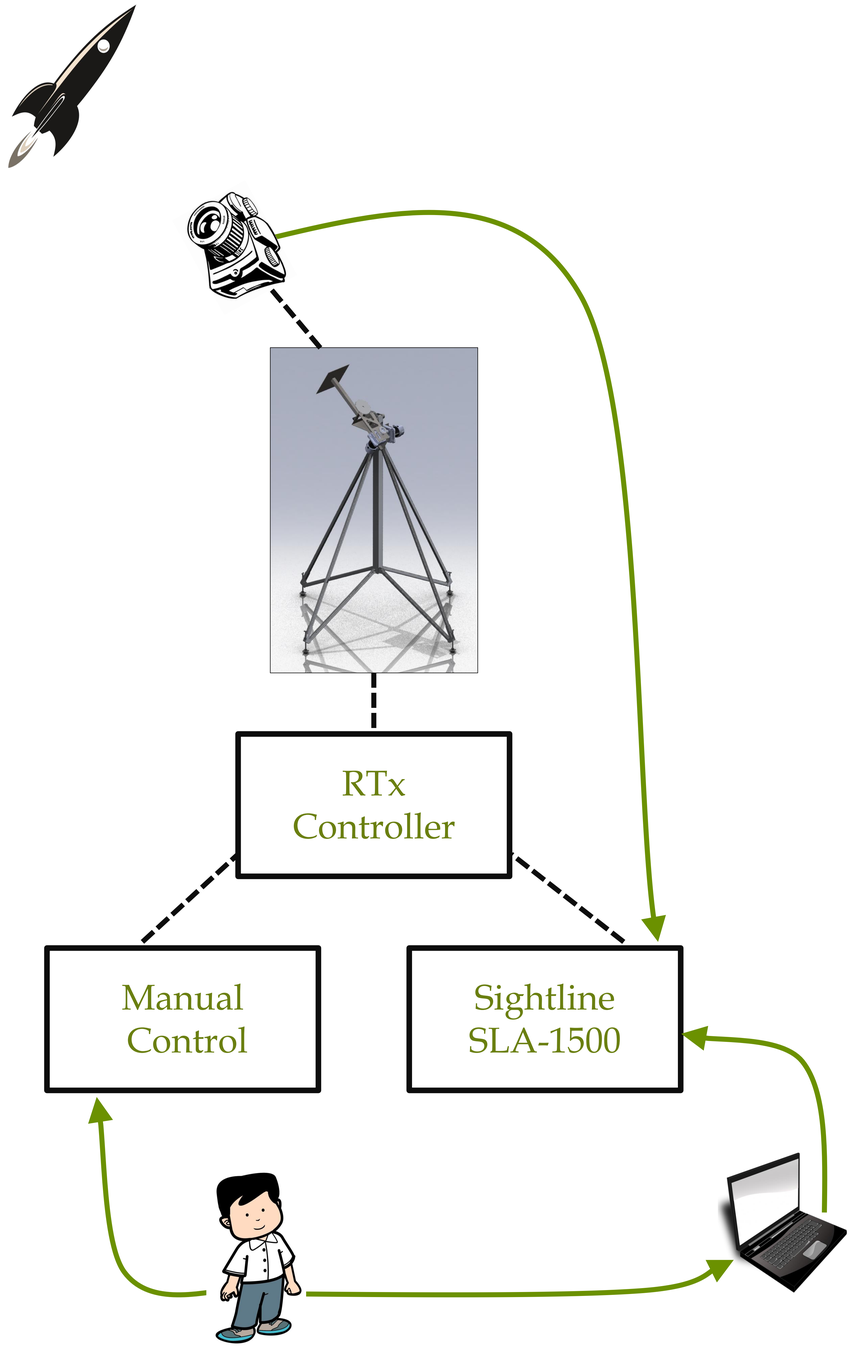
While this was an improvement over earlier handheld models, it still left too much room for human error.

IDEA

Eliminate room for human error by adding automatic tracking capabilities to the existing RocketTracks system.

IMPLEMENTATION

- Redo manual controller to improve its control loop and interface via Ethernet
- Interface with Sightline SLA-1500 to add Automatic tracking
- Create RTx controller board to interface between the mechanical system and the two control boards
- Implement Ethernet for communication between different blocks of RocketTracks system
- Preform FMEA analysis and safety protocols to protect from injury or damage to system



HOW IT WORKS

User selects mode

Manual Mode: User can adjust the position RocketTracks points by turning two nobs corresponding to the two axis

Automatic Mode:
- User selects object to track using laptop.
- Camera provides feedback to Sightline as to position of rocket.
- RTx Controller adjusts position accordingly

Emergency Stop: Automatic removal of power to system if:
- Big red button is pushed
- User gets too close to system
- Any single component breaks that could result in loss of system control

SYSTEM LEVEL BLOCK DIAGRAM