

Motivation

To implement distributed engineering, in collaboration with Florida Institute of Technology, by dividing tasks and working effectively.



June 2nd 2017 at Oakland University (Rochester, MI)

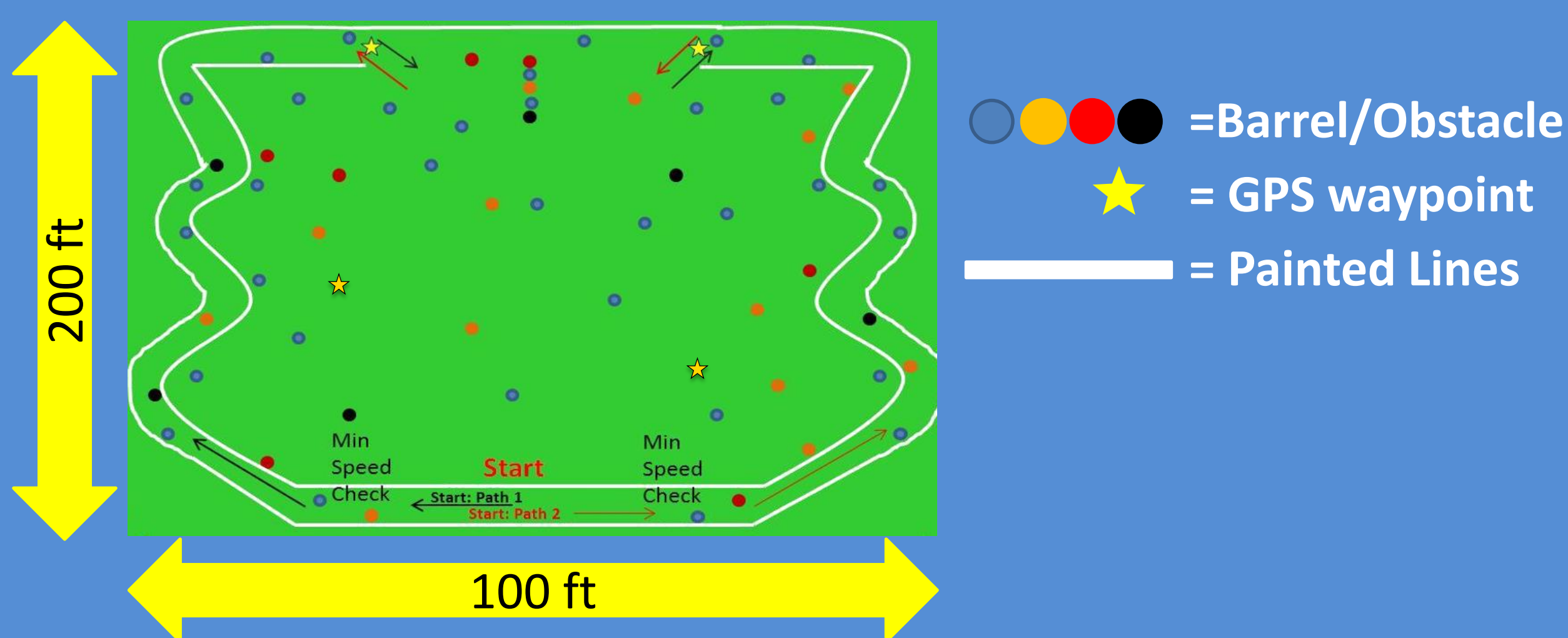


- COE Goals:
 - Platform Design
 - Hardware Integration
 - Localization
- FIT Goals:
 - Perception
 - Object Detection
 - Motion Planning

Goal

Design and develop an autonomous ground vehicle capable of collision avoidance, line detection, and waypoint navigation to perform in the Intelligent Ground Vehicle Competition in June 2017.

Project Scope

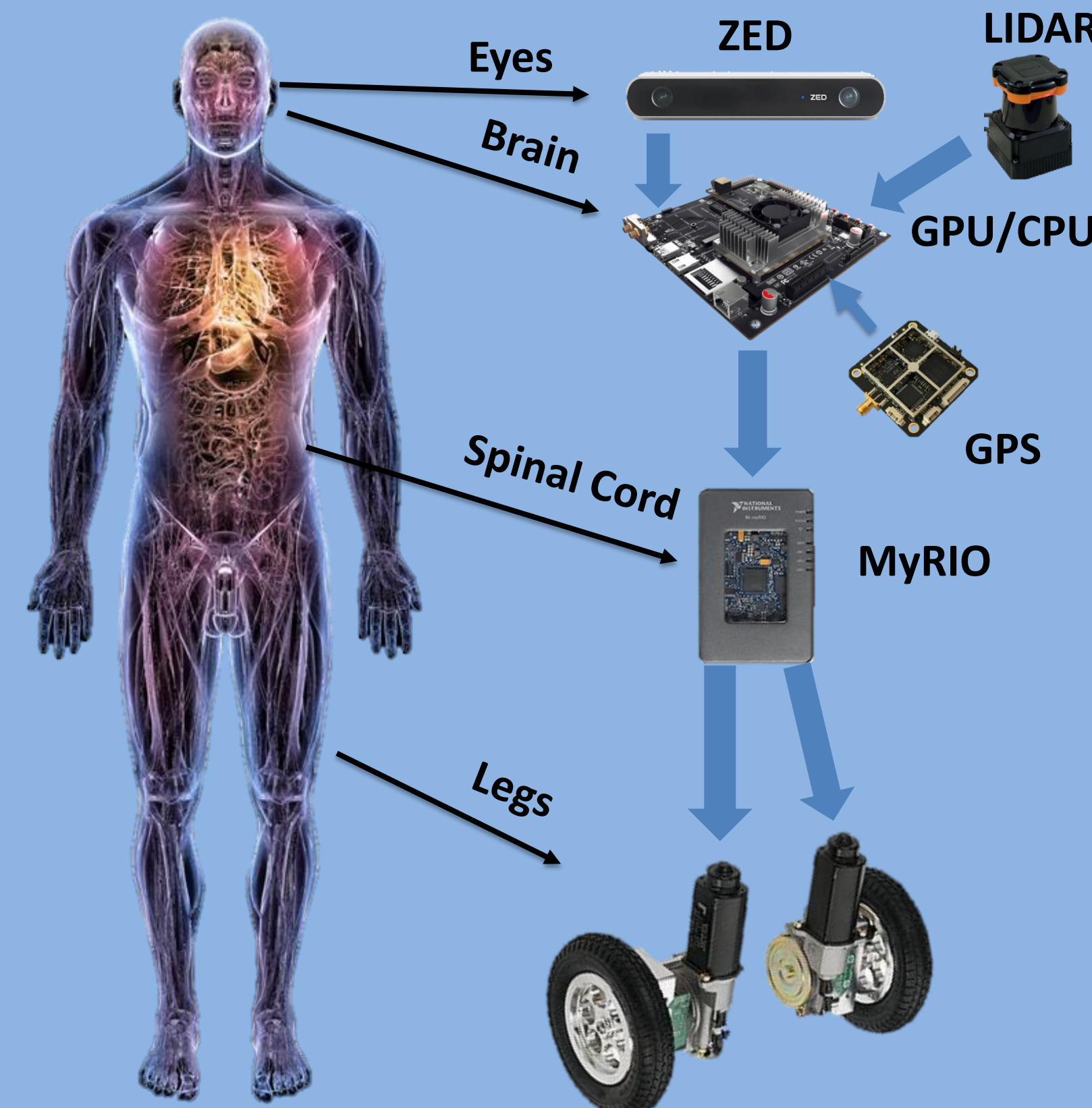


- Vehicle Dimension Constraints:
- 3ft < Length < 7ft
 - 2ft < Width < 4ft
 - Max Height - 6ft

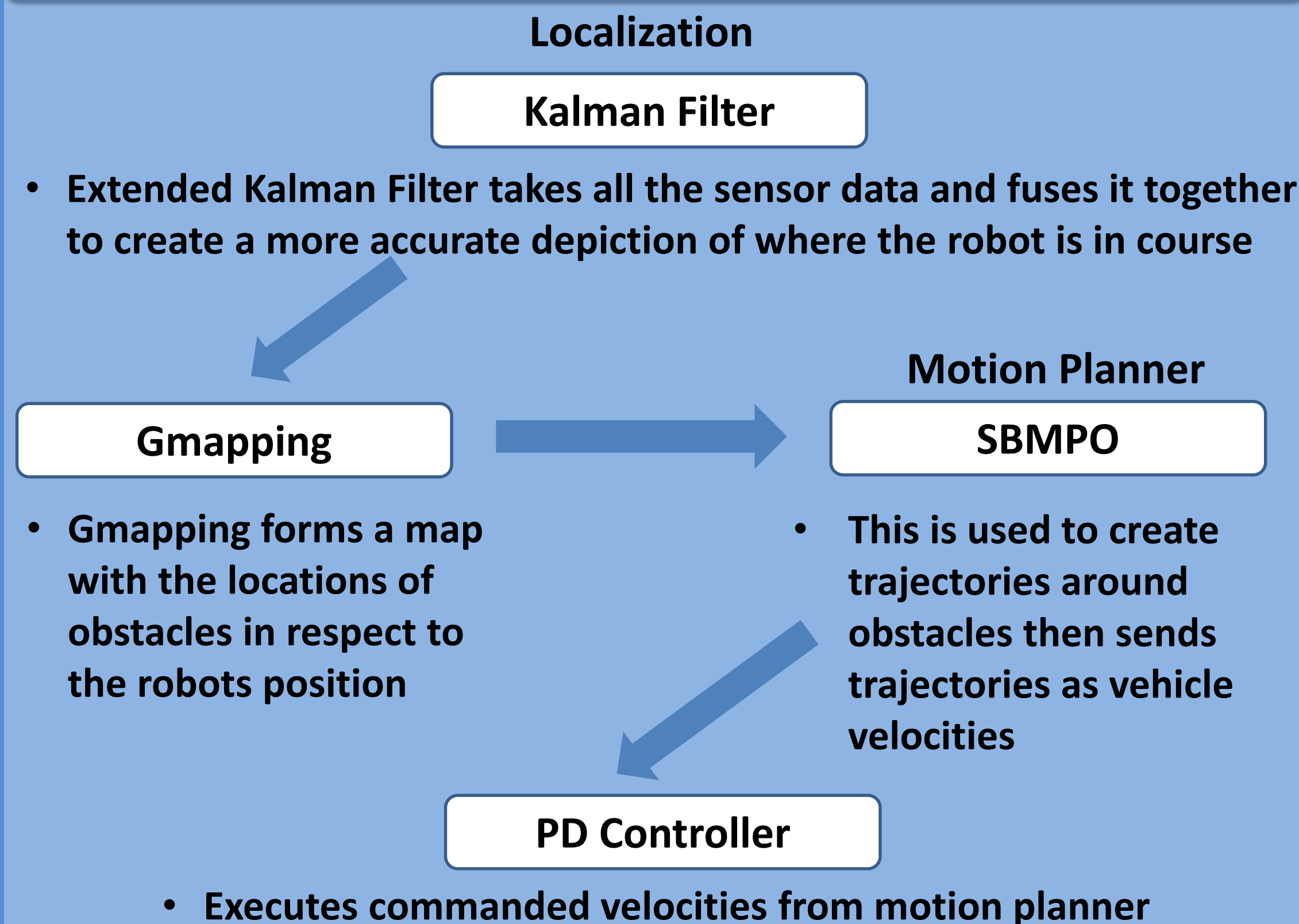
- Other Constraints:
- 1 mph ≤ Speed ≤ 5mph
 - Payload: 20lb - 18" x 8" x 8"
 - Waypoint diameter is 2 meters
 - Wireless and hardwire E-stop

Autonomous Hardware Implementation

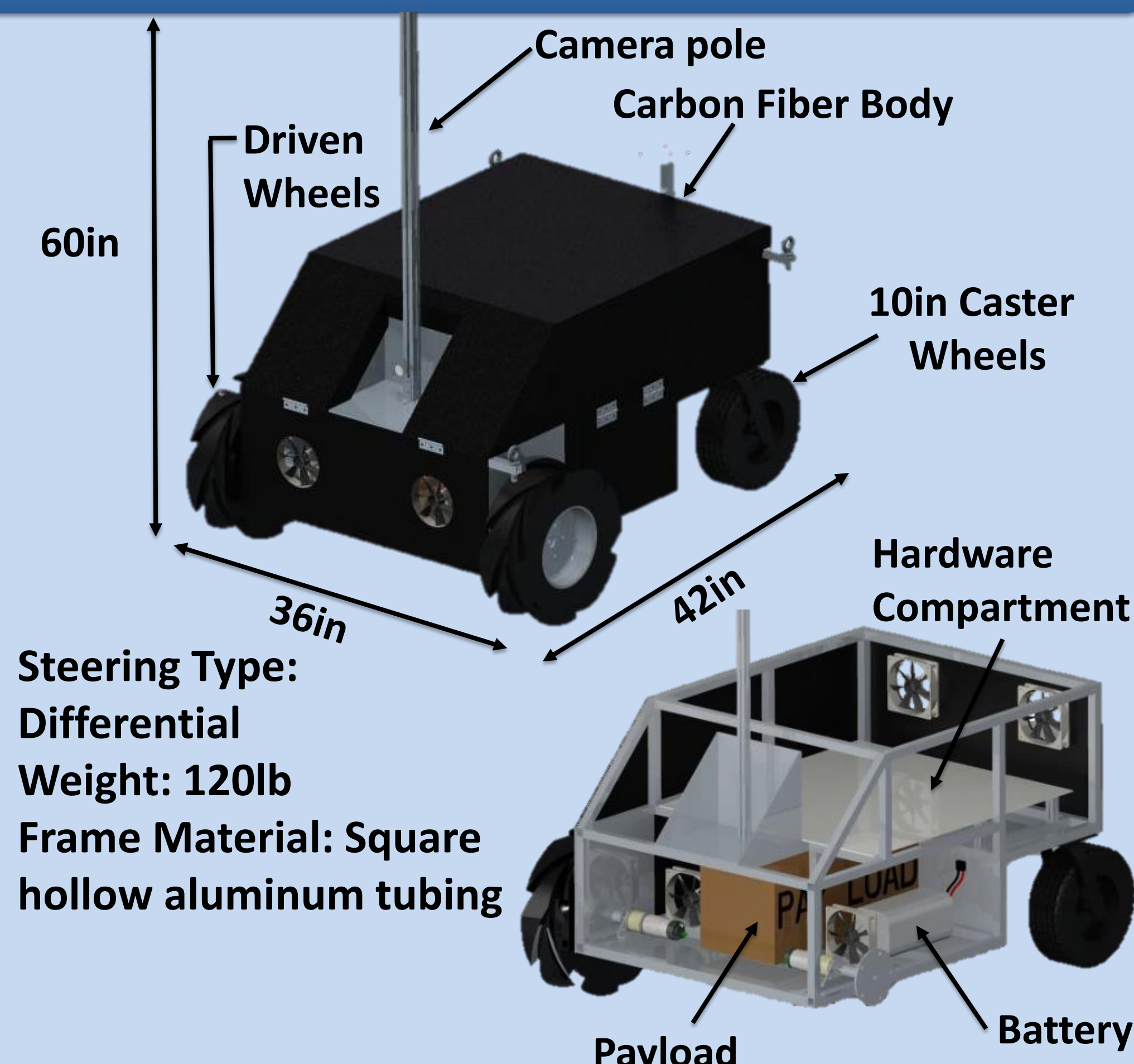
Similar to a human, an autonomous robot needs eyes, a brain, and neural pathways to operate autonomously.



Autonomous Software Implementation



Design



Achievements

- Fully fabricated robotic platform
- Water resistant design
- Development of PD controller
- Power Systems
- Integration of Electronics
- Executes trajectories from motion planner

Future Work

- Integration of perception/localization with planner
- Testing on mock course

Acknowledgements

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