Paddock GSP Boundary Definition UI Interface for Autonomous Paddock Mucking Robot

Longhopes Donkey Shelter

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Background Information

Located in Bennett, Colorado, Longhopes Donkey shelter was founded in August 1999. Kathy Dean and her husband Alan Miller have an unwavering passion to rescue unwanted donkeys, often destined for slaughter. Kathy recognized the need for a dedicated facility where donkeys could receive rehabilitation and training until suitable homes were found. A testament to their dedication, Longhopes became the first donkey shelter in the United States to be accredited by the esteemed Global Federation of Animal Sanctuaries. This prestigious recognition affirms their adherence to the highest standards of animal care and welfare. A critical component of humane animal care is keeping their environment clean of excrement. The donkey paddocks require daily attention to remove manure.

Project Goal

If you like to play with robots, this project is for you!

The ultimate goal is an autonomous paddock mucking robot. The robot is a combined effort of CSCI 370 and EDNS 490/491 Capstone students. A robot equipped with NVIDIA Jetson ROS operating system, LiDAR, GPS location and cameras is built to traverse the paddock, identify and pick-up and deposit manure in a specified location.

The path-finding algorithm relies heavily on GPS locating. The GPS boundary of each donkey paddock needs to be mapped. A UI needs to be developed so that Longhopes Donkey can map the multiple paddock boundaries. As the intention of this project is to build multiple robots, this utility requires extensibility for future use.

Fall 2025 CSCI 370 Objectives

- Develop a user interface for GPS mapping of paddock boundaries
- Allow for future changes in boundaries
- Allow for additional paddock definitions
- Integrate with current autonomous robot software suite

Suggested Skills:
- C++
- ROS

Suggested Review: https://longhopes.org/ – client website