

CISCOR UNMANNED GROUND VEHICLE

GROUP 10



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ACKNOWLEDGMENT



Project Sponsor

- Center for Intelligent Systems, Control, and Robotics (CISCOR)

Project Advisors

- Dr. Oscar Chuy
- Dr. Emmanuel Collins

Project Electrical Engineer Assistant

- Ryan David-Reyes

PRESENTATION OVERVIEW

- Brief project overview
- Locomotion manipulation update
 - Current Progress
 - Modification (if applicable)
 - Pending work
- Sensor mounting update
- Telecommunication update
- Supplemental components
- Overall project status

PROJECT NEED

- Currently there is no off road vehicle platform for autonomous research and design in CISCOR's inventory

PROJECT GOAL

- Modify an existing all terrain vehicle (ATV) to be capable of full autonomous movement by designing, researching and manufacturing components to allow unmanned locomotion control

PROJECT VEHICLE NAME

G. O. L. I. A. T. H.

Gas Operated Land Intelligent All Terrain Vehicle



LOCOMOTION OVERVIEW

Four main locomotion mechanisms on GOLIATH

- 1) Steering
- 2) Braking
- 3) Gear Selection
- 4) Throttle



GEAR SELECT OVERVIEW

System Objective

- System will provide the ability to select all 5 gears

Park, Reverse, Neutral, Low, High

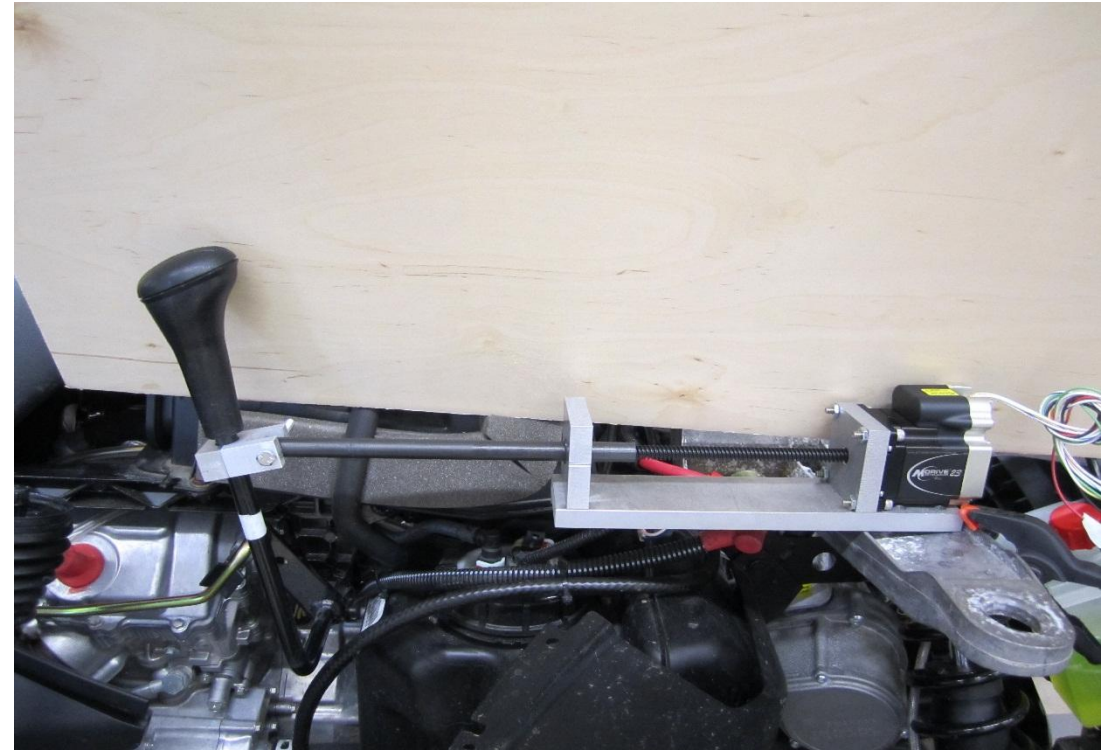


Shift Arm

GEAR SELECT UPDATE

Current Status:

- Permanently mounted
- Fully tested
- **READY FOR OPERATION**



GEAR SELECT UPDATE CONT.

Pending work:

- Wire actuator in series
- Program and calibrate wireless manipulation
- Manufacture protective cover



STEERING OVERVIEW

System Objectives

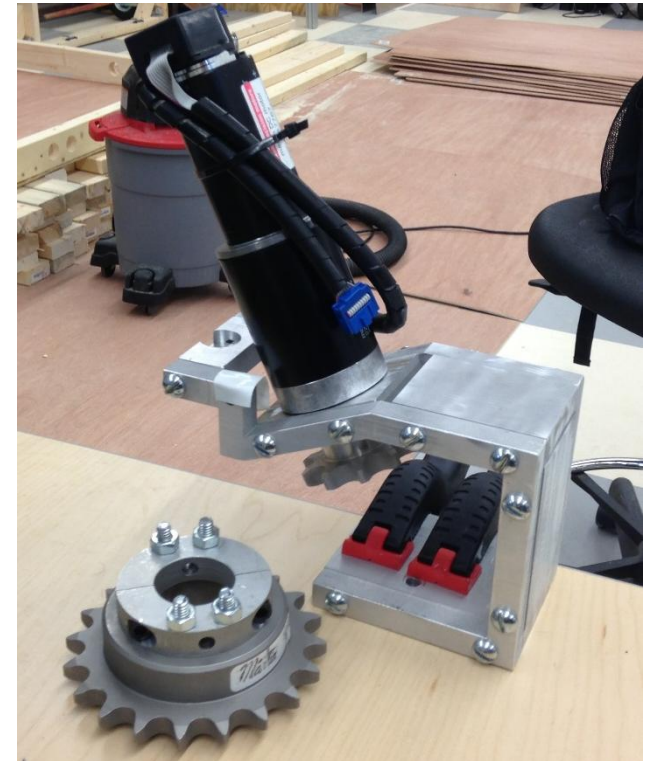
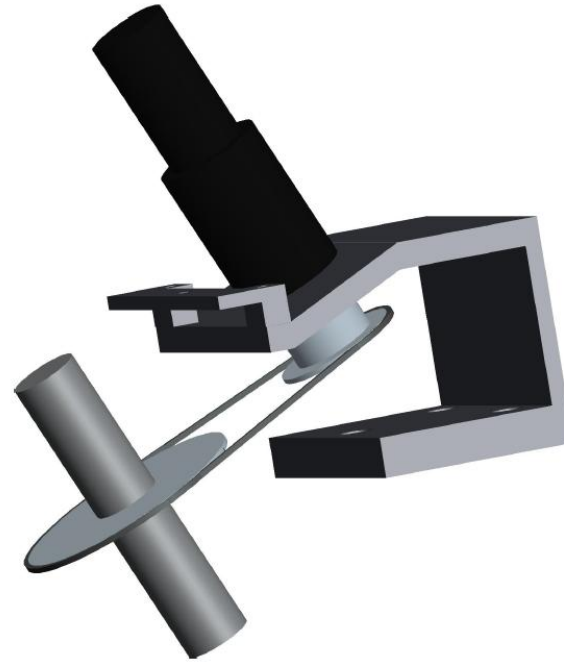
- System will be able to operate with full turning range
- System will be able to withstand feedback from terrain
- System will provide sufficient output power for turning at any speeds and on any terrain



STEERING UPDATE

Current Status:

- Fully manufactured
- Chain and sprockets delivered
- Initial load tests passed
- All fit checks passed



STEERING UPDATE CONT.

Pending work:

- Conduct further performance trials
- Program telecommunication controls
- Permanently mount design



THROTTLE DESIGN

System Objectives

- System will be precise and responsive
- System will utilize full throttle travel range



THROTTLE UPDATE

Current Status:

- Permanently mounted
- Fully tested
- **READY FOR OPERATION**



THROTTLE CONTINUED

Pending work:

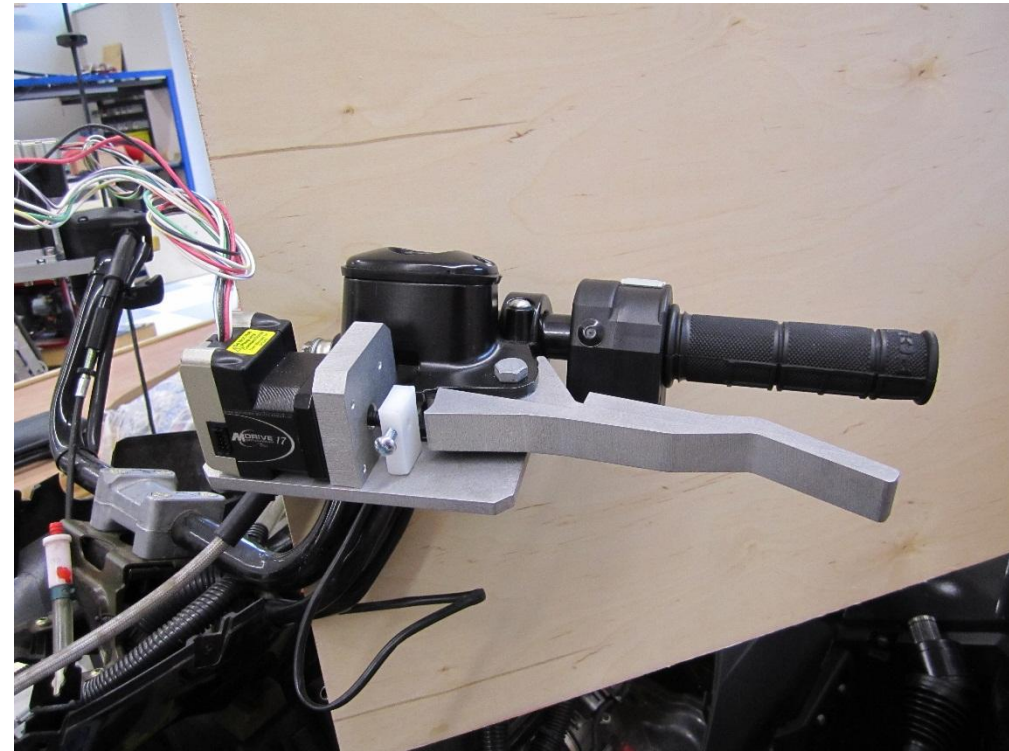
- Wire actuator in series
- Program and calibrate wireless manipulation
- Manufacture protective cover



BRAKING DESIGN OVERVIEW

System Objectives

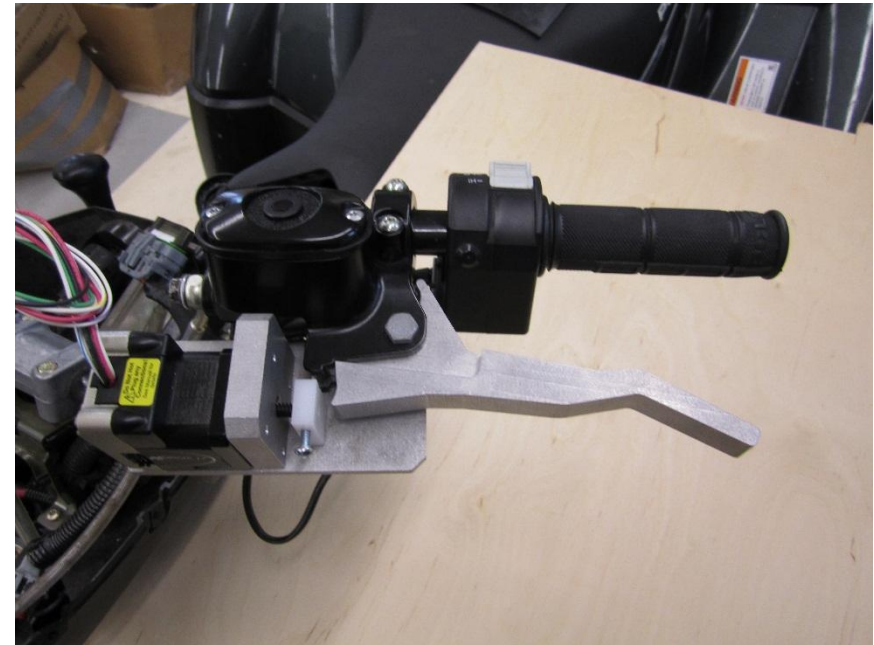
- System will have the same response time for braking as a human would
- System will be able to hold a braking position
- System will be able to utilize full braking range



BRAKING UPDATE

Current Status:

- Permanently mounted
- Fully tested
- **READY FOR OPERATION**



BRAKING UPDATE CONT.

Pending work:

- Wire actuator in series
- Program and calibrate wireless manipulation
- Manufacture protective cover



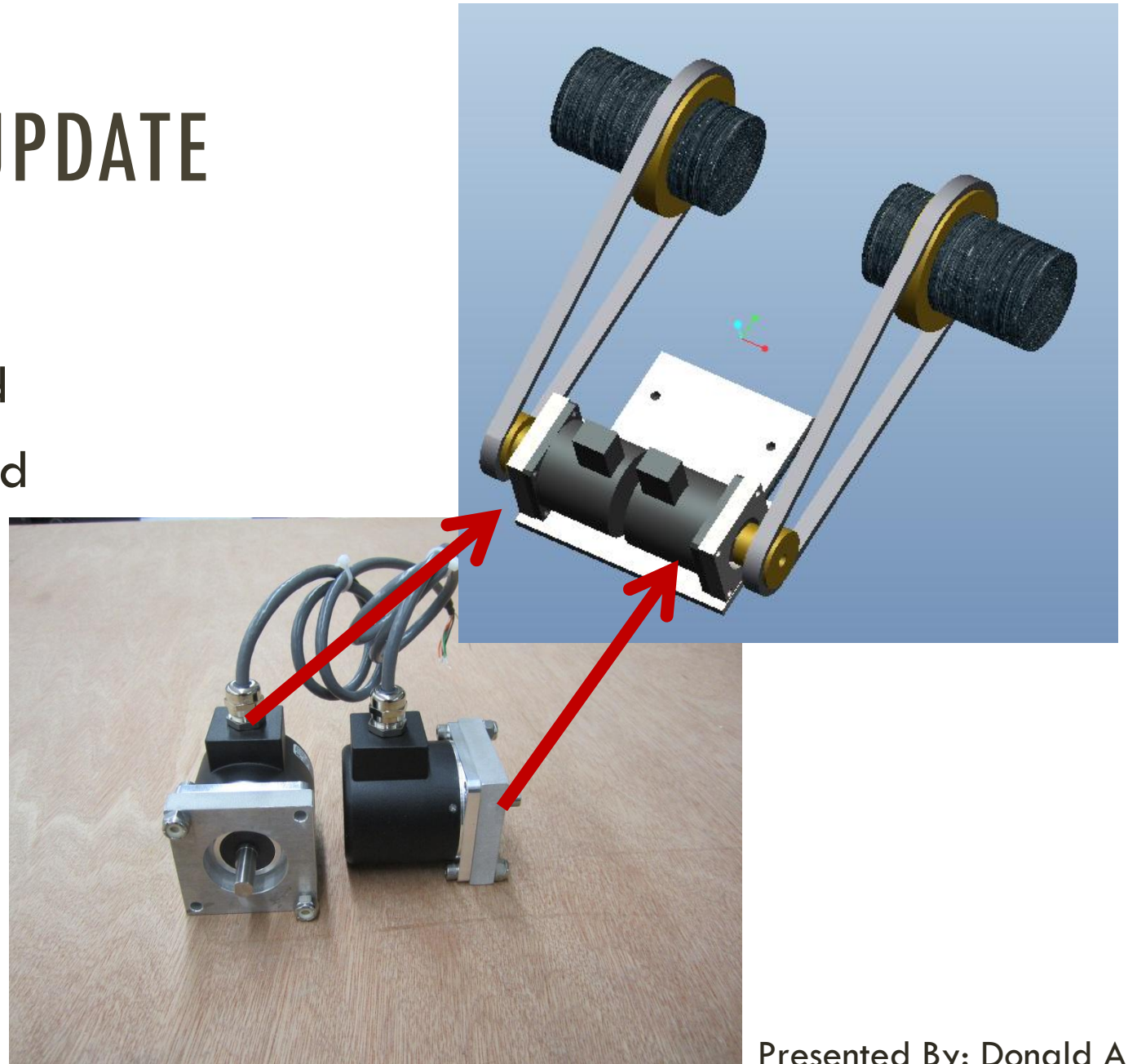
SENSOR MOUNTING UPDATE

Current progress:

- Encoders have been purchased
- Encoder mounting manufactured
- Supplement material has been ordered
 - Pulleys
 - Timing Belts

Pending work:

- Mount encoders



SUPPLEMENTAL COMPONENT UPDATE

Delivered Components:

- Watertight cargo box
- Logitech Wireless Controller
- Panasonic Toughbook
- High range Wi-Fi transmitter
- Auxiliary Batteries
- Emergency kill switches



SUPPLEMENTAL COMPONENT UPDATE



BASIC TELECOMMUNICATION PROTOCOL

BASE STATION



GOLIATH



REMOTE CONTROL

CURRENT PROJECT STATUS

- Major locomotion manufacturing has been **COMPLETED**
- Performance trials continue to generate excellent results
- Encoders and supplemental comp. have been delivered
- Project is proceeding as scheduled

Overall Pending Project Work:

- Wire actuator to on-board batteries
- Design computer mounts
- Test encoders upon installation

QUESTIONS?



ADDITIONAL SLIDES

ENCODER

- Encoder Products Company: Model 725 - I

Specifications

- Industrial Housing
 - Flex Mount Coupler
- IP67 Seal
- Resolution: 30,000 Cycles/Revolution
 - 120,000 Counts/Revolution
 - Speed: Up to 3,000 RPM



TESTING OF ACTUATORS

