

# Trench 'N Edge

## Wireless Controlled Trencher

### Objective

Build Wireless Control System for Hydraulic Trenching Machine

### Why?

Current System is Labor Intensive. Requires User to Drag 300 Lbs. Machine in Desired Pattern.

### Marketability

Fiber Optic Cable  
Use the Trencher to Dig Trench Needed For Fiber Optic Communication Lines

Drip Irrigation  
Trencher Cuts Path for Irrigation Systems in Countries, Like Australia, That Have Banned Other Forms of Irrigation

### Function

User Pushes Button on Remote to Control Trencher

Microcontroller Uses Measured Voltage to Display Wheel Heading

### Results

#### Successes

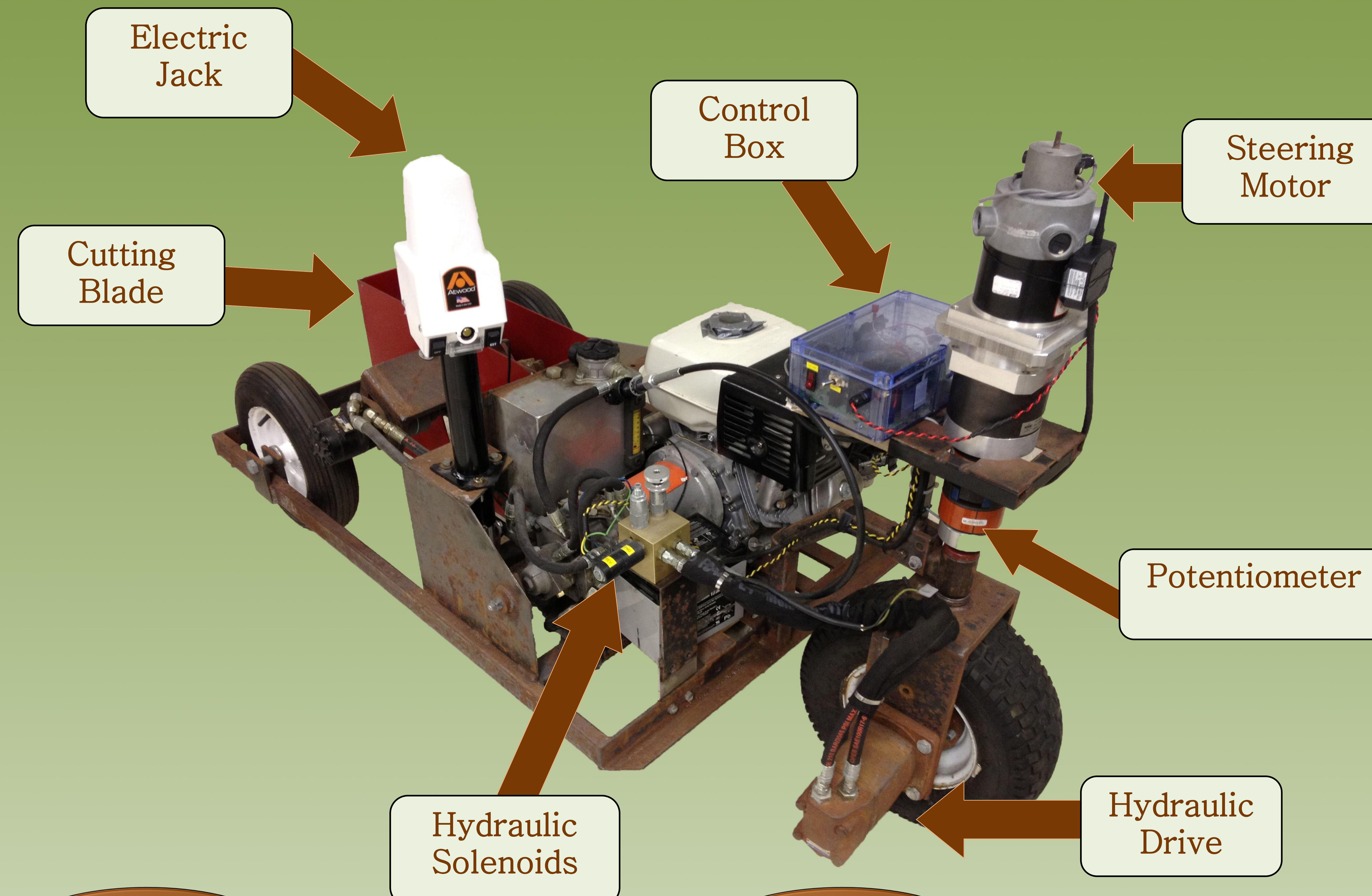
Full Four Way Range of Wireless Motion

Wheel Heading Displayed With  $\pm 1^\circ$  Accuracy

Cutting Blade Wirelessly Adjusted Via Electric Actuator

Future Improvements  
Autonomous Motion

Gas Motor Shut Off Via Kill Switch



### Requirements

#### Movement

Four Way Range of Motion  
Blade Height Adjustment  
Front Wheel Heading Display

#### Safety

Trencher Will Stop Via Wireless Kill Switch Within one Second

### Approach

#### Movement

Process Input Signals Using Microcontroller

#### Navigation

Calculate Wheel Heading Using Potentiometer Voltage Measurements

#### Project Team

Yiming Tao: Software and hardware interface  
Zachary Jahoda: Sensor testing and transmitter/receiver specification  
Syazwan Shamshuri: Actuator specification and installation  
Frank Pichler: Circuit design and fabrication  
Hazimi Awang: Motor testing and circuit layout

Industrial Advisor – Pat Dean (Trench 'N Edge)  
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