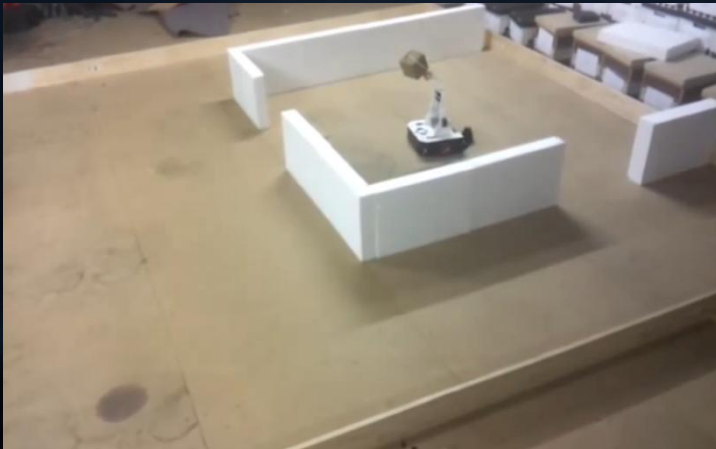
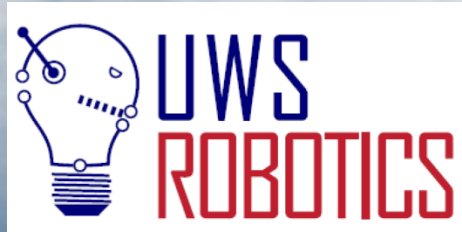


*National Instruments:
Autonomous Robotics
Competition 2013*

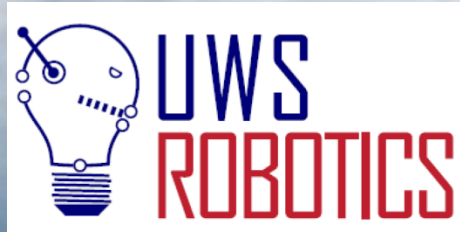


*Lixang Li
Craig Borrows
Nicholas Ralph
Michael Jay*



Design Aspects

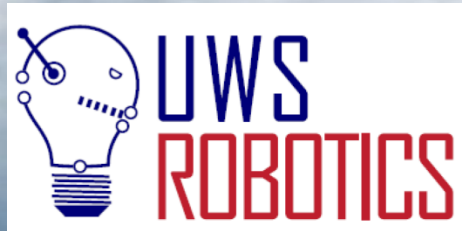
- **Chassis & Drive mechanism**
- **Path planning & Autonomous Movements and Sensors**
- **Kinematic manipulator & Cube handling**



Chassis & Drive Mechanism

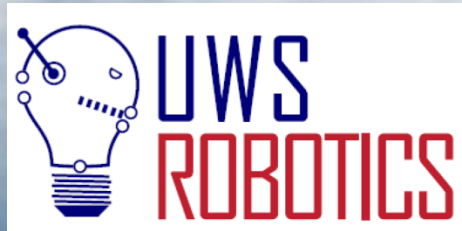
- **2 Wheel Differential Drive (Maxon Motors with Controllers and Encoders)**
- **Laser cut acrylic sheet Plexiglas**





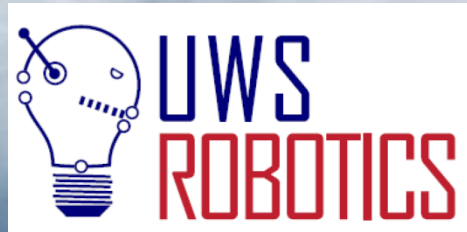
Path planning & Sensors

- **National Instruments SB-rio & LabVIEW software**
- **Point orientated path planning**
- **Lidar sensor, encoder data, meshed with a simple checking algorithm (Hokuyo URG series)**
- **Distance and segment based detection system**



Kinematic manipulator & Cube handling

- **Simple Laser Cut Robotic Arm with Counterweight (Mobility can be classed with 6 variables, 3 DOF)**
- **Hall sensor differentiates cubes in to two segmented prismatic slide shafts.**
- **Waste material is then taken for offsite disposal.**



*Special thanks to Dr. Gu Fang and
Robo Dino hackespace.*

- Questions?

