Welcome!

Novel EOD Robot Design with a Dexterous Gripper and Intuitive Teleoperation

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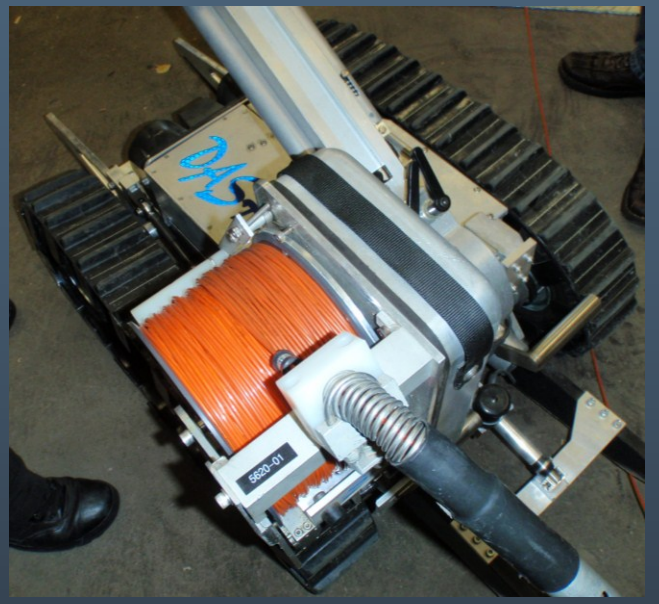
The Problem

"The use of first responder and homeland security robots is based on providing a robot that is less expensive to put in the field than a trained soldier."

–Homeland Security Newswire

What's left?



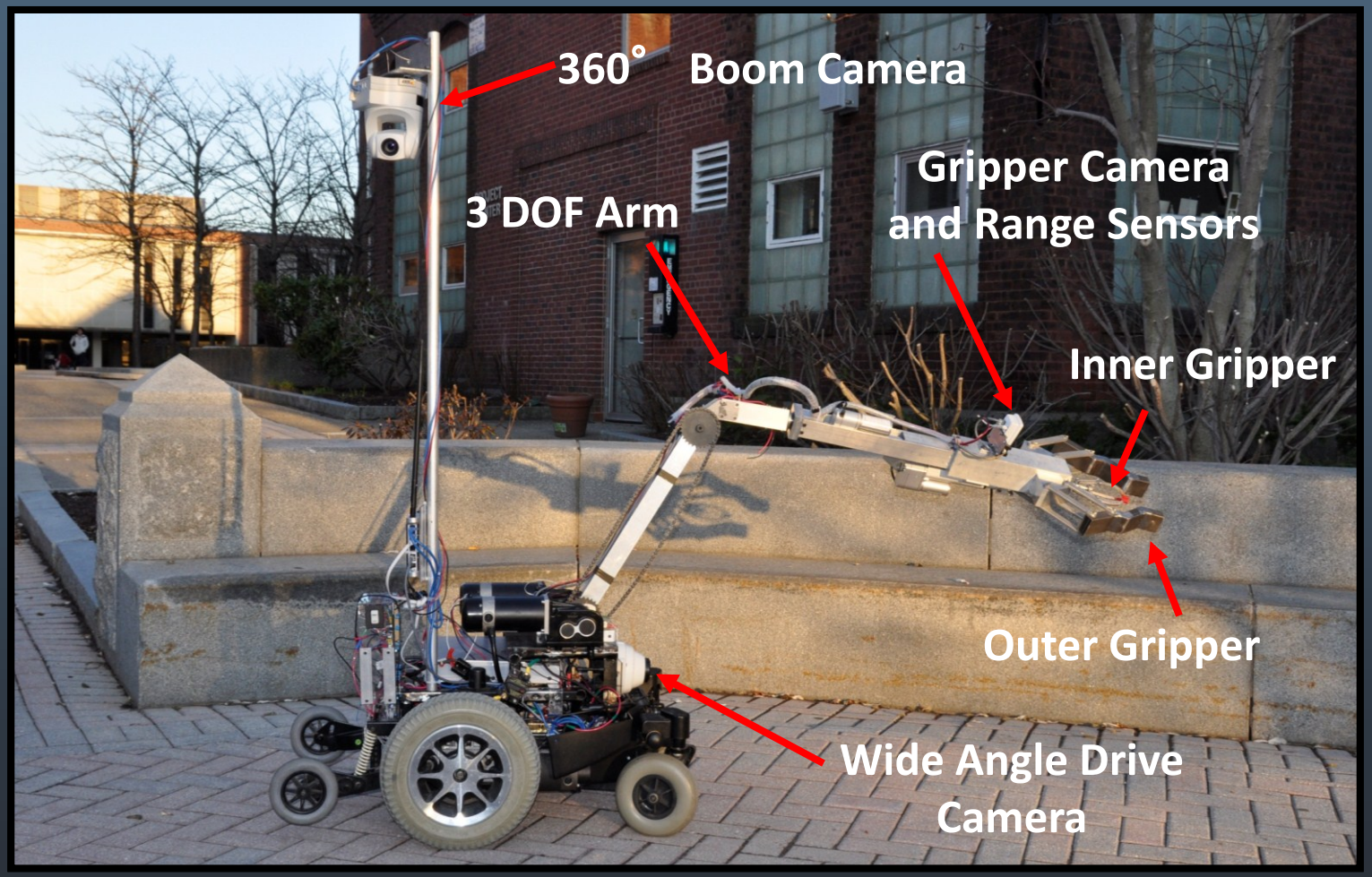
"We need a robust enough sensor suite to perceive the environment and operate safely around people and moving obstacles like other vehicles"

-Aerospace and Defense Media Group

Objectives

- Low Cost
- Sensor Feedback
- Dexterous Gripper
- Intuitive Controls
- Wireless Communication

Robot Design

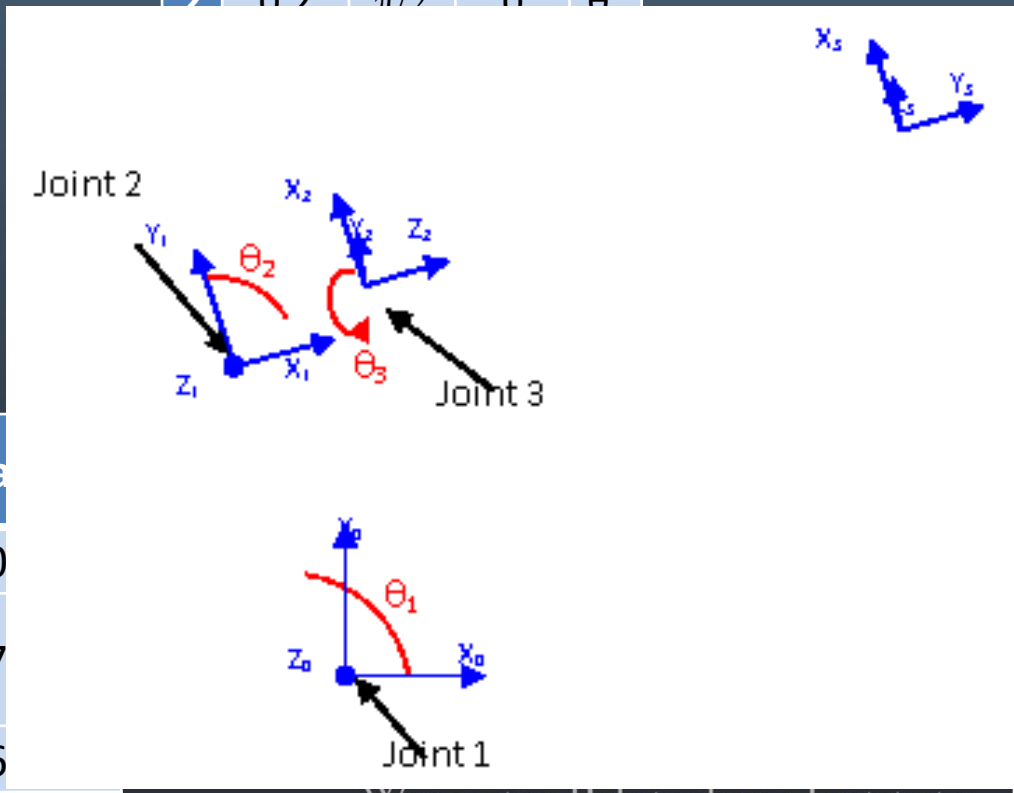


Arm Design

- 3 DOF arm
- Multi-mission use
- Long reach
- Good mobility
- Multiple approach

D-H Parameters

i	l_i (m)	α_i	D_i	θ_i
1	0.48	0	0	θ_1
2	0.2	$\pi/2$	0	θ

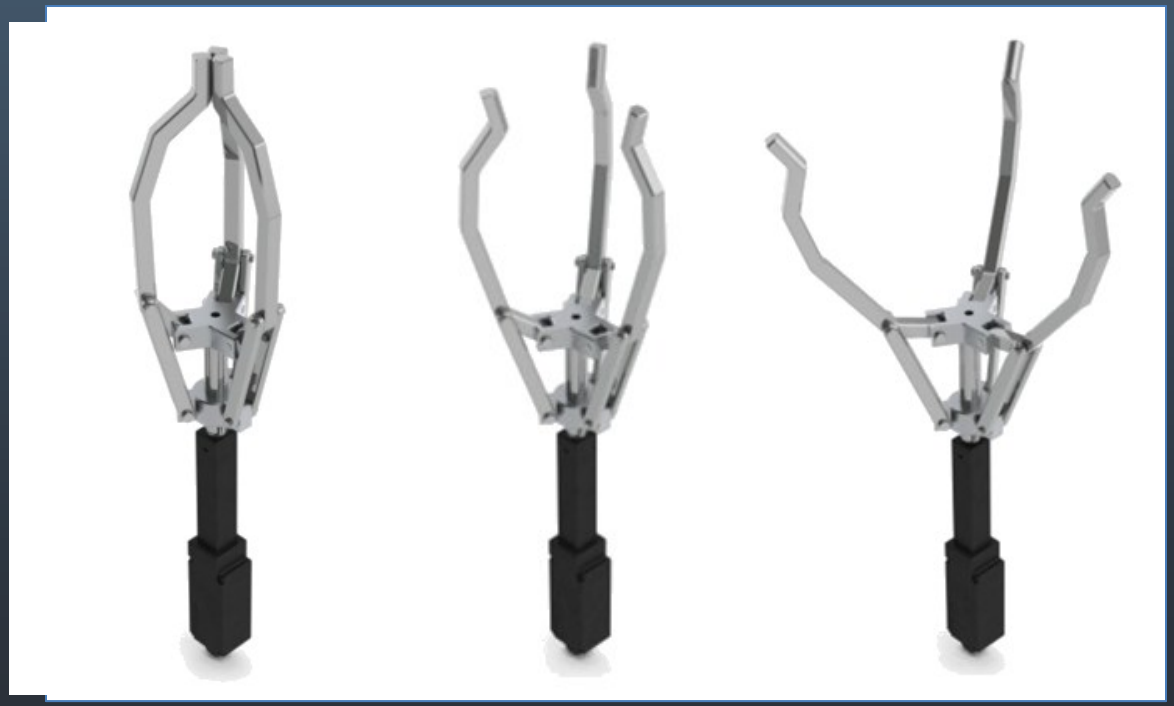


Arm Motion Control

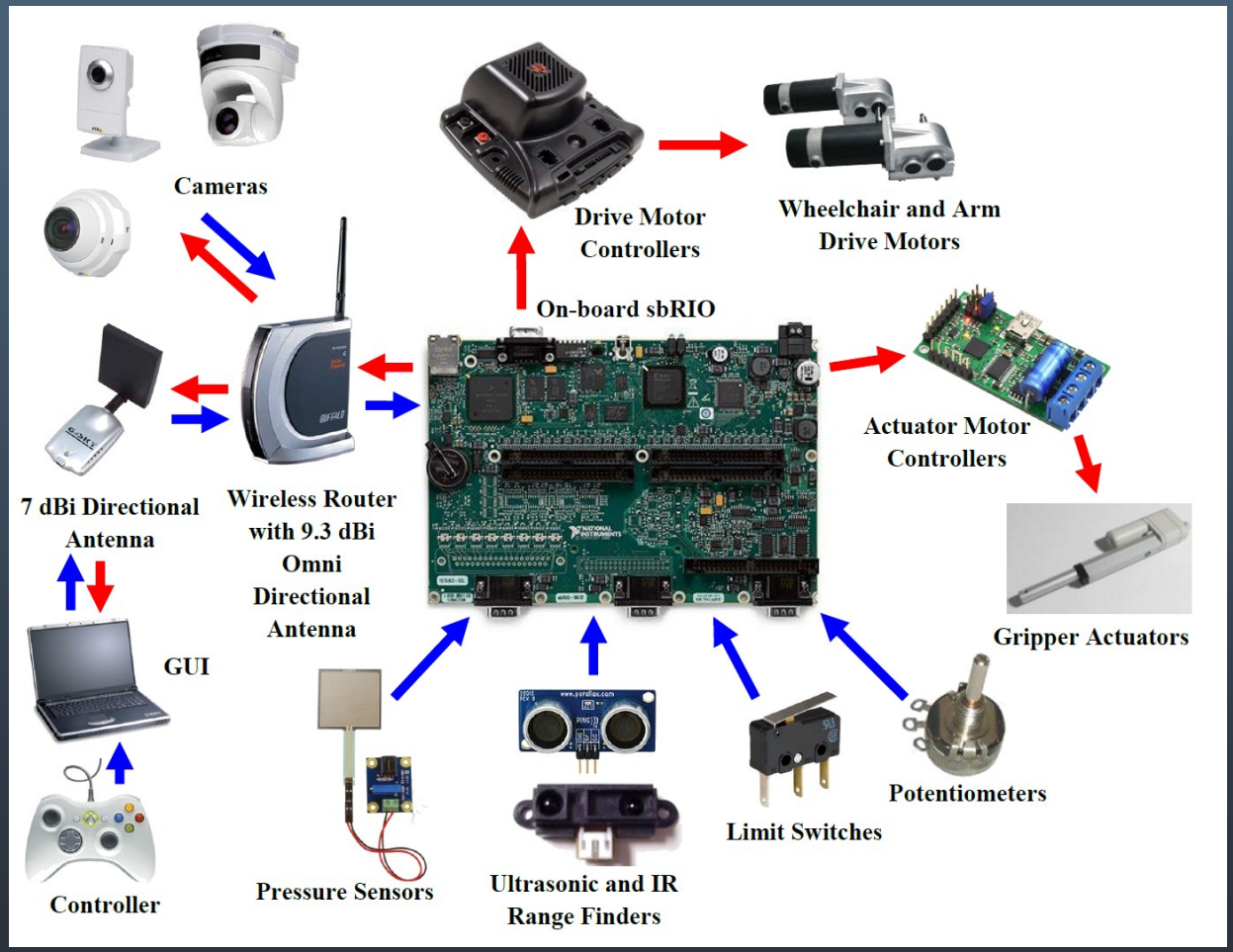
Joint	Drive Method	Rota
1	Worm-gear gearbox	20
2	Chain drive through worm-gear gearbox	27
3	Planetary Gearbox	36

Gripper Design

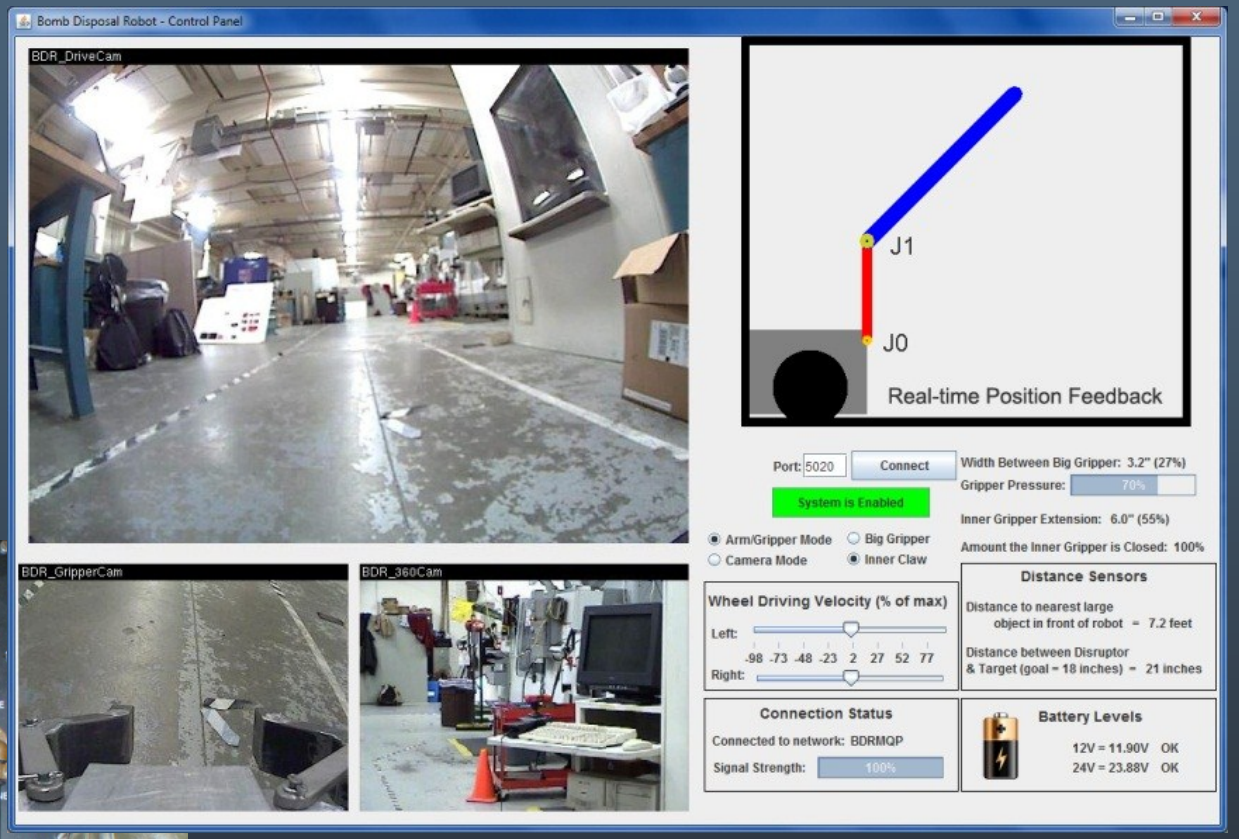
- Designed for detonator removal
- Driven by linear actuators



Hardware and Control



Graphical User Interface



Controller

Our Controller

Talon Controller

Andros Controller

The Robot in Action

Thank You!

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