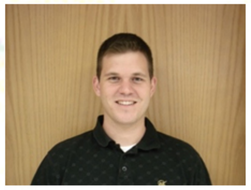
A.R.M.H.A.I.R.

automated radiation monitoring hazardous area inspection robot

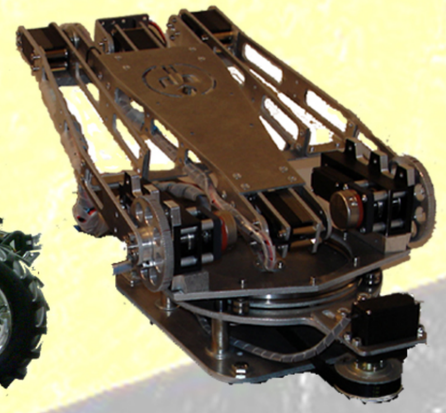
John Womack — Mechanical Engineering



James Stiling — Mechatronic Engineering

Ross Huber — Mechanical Engineering

Joel Amato — Physics, Electrical, Mechanical, Mechatronic Engineering



Projct Objectives		
Objective	**Target**	**Test Procedure**
Work Envelope R Hemisphere Radius	R ≥ 36 inches	Measure Total Distance from Base Origin to Center of Sensor Mount
System Resolution ΔR Sensor Gradient	ΔR ≤ 1 inch	Produce Standardized Grid, and Use System to Measure Spacing
Arm Extension Rate ΔR/ΔT Sensor Velocity	ΔR/ΔT ≥ 24 in / 30 sec	Measure Time of Travel for the System to Move from Point to Point.
Retracted Height	H ≤ 4 inch	Measure Vertical Projection from Base Origin
Retracted Length	L ≤ 20 inch	Measure Horizontal Projection from Base Origin

Mechatronic Constraints	
Attribute	**Constraint**
Supply Voltage	8.4 Volts Standard DC
Sensor Output	0-5 Volt DC Test Signal
Data Communication	4-Wire Serial Protocol
Required Feedback	Sensor and Telemetry Data
Operator Interface	Remote Control

Mechanical Constraints	
Attribute	**Constraint**
Sensor Attachment	Universal Mount
System Attachment	8 Square Inch Area
Payload Capacity	4 Ounce Minimum
System Weight	8 Pounds Maximum
Life	0.5 miles of Sensor Travel

SAFE AREA

HAZARDOUS AREA