

## Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P09029	Robotic Hand Improvement	Assistive Devices and Bioengineering	Artificial Organ
Start Term	Team Guide	Project Sponsor	Doc. Revision
Winter 2008	Dr. Lamkin-Kennard	Dr, Lamkin-Kennard	3

### Project Description

#### ***Project Background:***

The long term goal of this project is to design a robotic arm capable of the full range of hand and finger motions. Prior phase of the project focused on finger motions. This iteration will focus on wrist and elbow motion. The hand also needs to be scalable as a long term goal.

#### ***Problem Statement:***

This iteration of the Artificial Limb project is to solve the design challenges of the wrist, forearm and elbow, adding to the designs of previous projects. A fully accurate computer model will be developed that can be controlled in the same way a physical prototype would be.

#### ***Objectives/Scope:***

1. Develop designs for the wrist, forearm and elbow.
2. Develop a computer model controllable in the same way a physical prototype would be.
3. Incorporate designs for the already made hand.

#### ***Deliverables:***

- A prototype that can demonstrate the designs for the wrist and elbow.
- Thorough documentation of all designs.
- A physically accurate computer model.

#### ***Expected Project Benefits:***

- This iteration of the robotic arm will solve the design challenges of wrist, forearm and elbow motion.
- First use of a computer model to accurately portray output from the controls.

#### ***Core Team Members:***

- Casey Dill – Team Lead
- Andrew Torkelson
- Arthur Connors

### Strategy & Approach

#### ***Assumptions & Constraints:***

1. Knowledge of how the air muscles work and designs for the hands will be acquired from other iterations of the project.
2. The designs will need to be scalable.
3. The project may not infringe on patents, and all members must follow all the rules and regulations of RIT and the law.

#### ***Issues & Risks:***

- Air muscles work non-linearly. This has created controls problems in the past.
- Further funding might not be found, limiting the scope of the prototype.
- No one on the team has a strong biomedical background, increasing the amount that the team needs to learn as the project progresses.
- Only three team members.