Registration Form

TEAM INFORMATION

Team Name/Project Title: Two Thumbs Up / Mechanical Thumb Prosthetic
Department: Bioengineering
Faculty Advisors: Cassandra Howard, Dr. Steve Lammers, Dr. Richard Weir

Team Members (full name, e-mail):

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PROJECT INFORMATION

Description:
An easily operated, durable, and fully mechanical thumb prosthetic that can restore lost or diminished hand function resulting from partial to full thumb amputation.

Abstract:

Thumb amputees - especially employees in blue-collar professions that include construction, machining, or warehousing and distribution - suffer from dramatically reduced or lost ability to perform occupationally-dependent tasks due to diminished hand function. There is a need in this patient segment for a low cost, highly durable solution that restores the ability to perform job requirements and basic gripping and clutching tasks. The existing thumb prostheses are generally insufficiently robust, overly complex, or too generic in fit to address the needs of this patient segment.

The proposed solution to this problem is a highly durable, cost effective, and fully mechanical thumb prosthetic that can be operated with little to no intervention from the opposite hand. This device will allow movement through at least two degrees of freedom at the virtual carpometacarpal (CMC) joint and will ultimately recapitulate flexion, extension, adduction, and abduction movements. By recapturing thumb movement, there are three primary hand grip positions our device aims to
recreate: three-jaw chuck, key grip, and hand flat. Aside from the functionality of this device there is also a need for this prosthetic to be designed with an appealing aesthetic presentation in mind. Team Two Thumbs Up is working in conjunction with Point Designs LLC, a pioneer in the hand prosthetics industry, and will be using their current prostheses initiatives as a guide for the physical presentation of this device.