Feeding Utensil Holder for Individual with Charcot-Marie-Tooth Disease

Overview
This project will combine the positive aspects of two previous projects to create a simple, lightweight device that holds an eating utensil on a wrist splint that will enable the user, who has a degenerative neuromuscular disease, to feed himself independently.

Objectives
Our original objectives were that the model will be lightweight, durable, discrete, easy to use, and general adjustments will be made upon the customer’s request. This semester, we were able to succeed in completing these objectives to create a final product.

Approach
• Customer needs were gathered from previous projects and through visits with the client
• General design of product was already known but new additional components were added through concept generation and selection
• No similar existing product existed, but relevant patents were reviewed to ensure no specific components copied already existing designs
• Client was spoken to through email and multiple visits throughout the semester
• CAD models were made and improved upon as the semester went on
• 3D printing was used to create all three prototypes and the final design
• All prototypes were given to sponsor throughout semester in order to gather his opinion on the improvements made
• Although large stresses are not expected to be placed on product, a Finite Element Analysis was performed
• These models were tested by the client and it was verified that product can handle all expected forces
• Final product was tested and approved by client

Outcomes
• Design changes improve quality of device
• Improved design means client can continue eating independently
• Due to 3D printing, this product can be created relatively inexpensively
• If any individual component breaks, a new piece can be created without having to replace entire device
• Manufacturing time is very short in case client is in need of replacement
• In the future, a product like this could help millions of other individuals affected by degenerative diseases