

# Cord-Operated Prosthetic Finger

Tom McIlwain

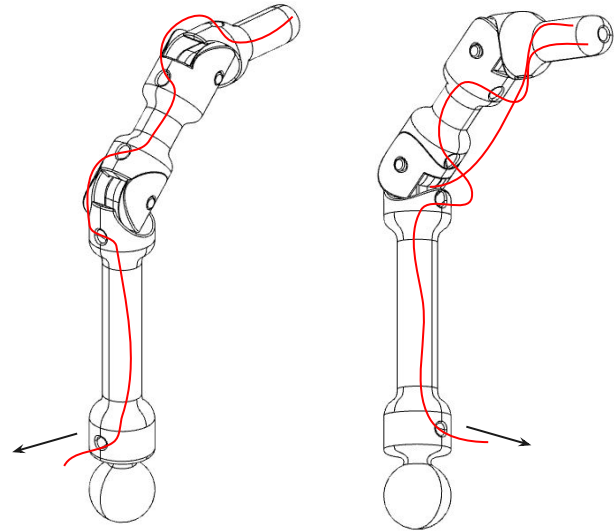


# Overview

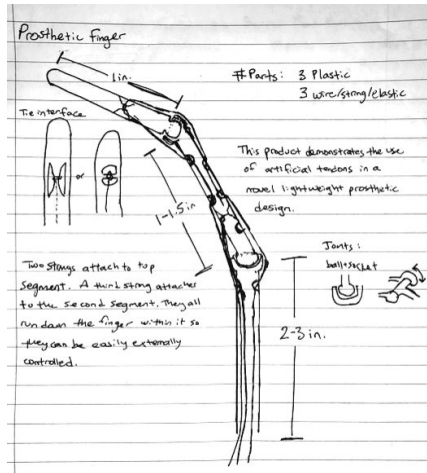
A prosthetic finger that is operated by cords running through it and is designed to be attached to a corresponding prosthetic hand.



Cords run through holes in each of the individual 'bones' on both sides. By pulling the cords, the finger can flex or elongate.



# Design Iterations

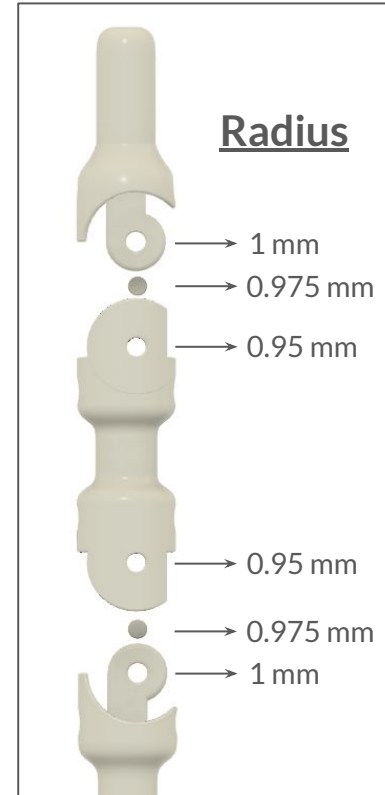


# Design

Two pins are inserted through holes at the interface between the artificial bones to create a hinge joint.



The holes vary in size for press fitting.



# Redesign for Scaled Manufacturing

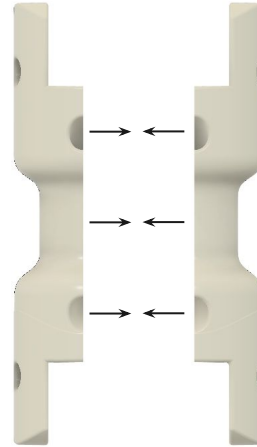
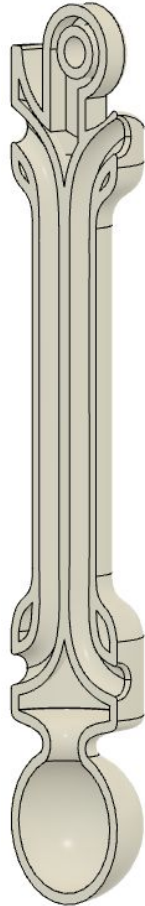
## Material:

Nylon (polyamide plastic)

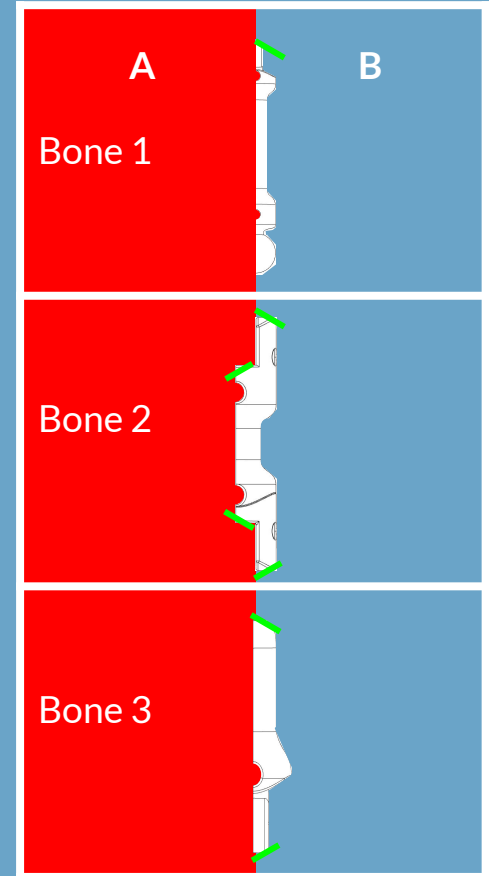
## Manufacturing Process:

Solidification using Injection Molding

- Each part is split in half for 2 individual injection molding parts
- Constant wall thickness of 0.03"
- Smooth edges
- 1° draft angles added (shown in green)



Bones are assembled using welding such as ultrasonic welding



## Cost per finger

- Each finger = 3.072 grams
- Rounding to include sprues = 3.5 grams

Material: Nylon Plastic Pellets from  
McMaster-Carr (\$364 for 50 lbs (22,680  
grams))

$22680 / 3.5 = 6480$  prosthetic fingers

$\$364 / 6480 \text{ fingers} = \textbf{\$0.056 per finger*}$

\*This does not include the cost of  
manufacturing, only the materials.

