3-D Printed Hand Prosthetic

Timothy Gover, Jessica Raboci, and Jason Yoder

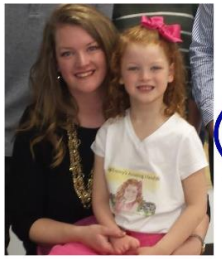
School of Science, Engineering, and Health, Messiah College, Mechanicsburg, PA.

The Need

- 2000 children are born every year with limb defects.
- Children are not normally fitted with a prosthetic until their teens, due to expenses, wear, and tear.

- Because they are continuing to grow, a new prosthetic would be needed every 1-2 years.
- Prosthetic limbs can cost upwards of $100,000.

Client and Partner



Emily and her Mother

Eric Shoemaker

Past Hand Designs

- Raptor Reloaded from e-NABLE
  - Doesn't look as realistic
  - Lots of string to tie

- Flexy Hand 2: Version 1
  - Fingers were very limp
  - Tension in the string was not consistent

- Flexy Hand 2: Version 2
  - Not properly scaled to Emily's hand
  - Compliant Grip not functional

Final Hand Design

- Flexy Hand 2 by Steve Wood, with modifications
- Printed with PLA plastic on a Makerbot Z18
- Compliant grip balancers by Steve Wood - allows other fingers to move if one is stopped from resistance
- Flat Versimold hinges - a moldable silicone rubber compound used to relax fingers after contraction
- Slightly curved thumb with her name and hearts - attached to residual thumb
- Gauntlet/wrist cover - protects the compliant grip balancers
- Operates mechanically via wrist action

Compliant Grip Balancers

Acknowledgments

- Dr. Emily Farrar
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Further Questions?

- Timothy Gover: tg1200@messiah.edu
- Jessica Raboci: jr1375@messiah.edu
- Jason Yoder: jy1191@messiah.edu

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