Biomedical Applications Of 3D Printing

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Siena College Class of 2015

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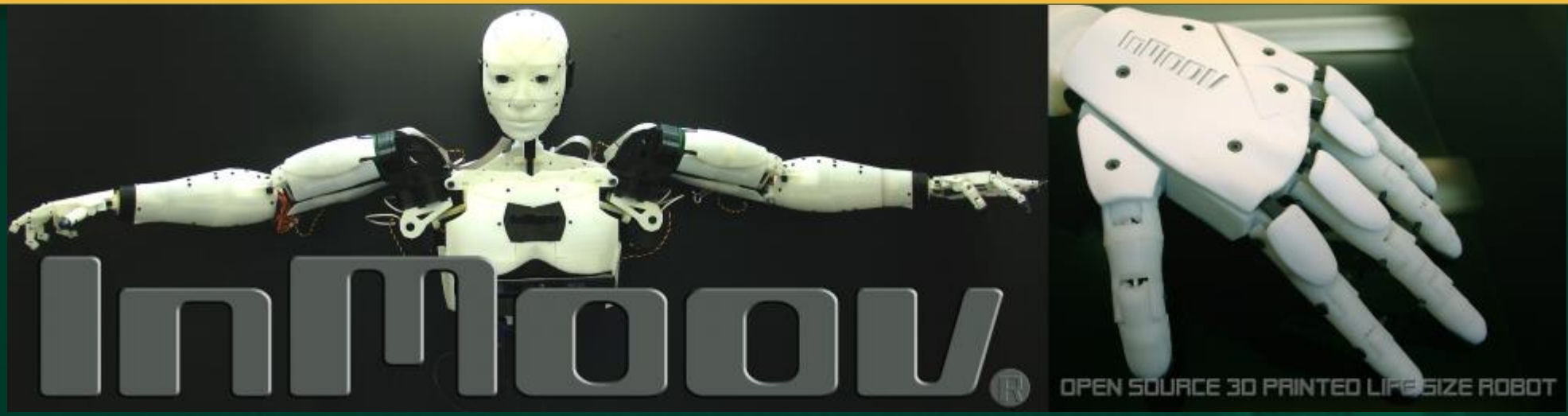

http://www.inmoov.fr/

Gael Langevin

All 3D printed parts and instructions can be found at:
http://www.inmoov.fr/download/

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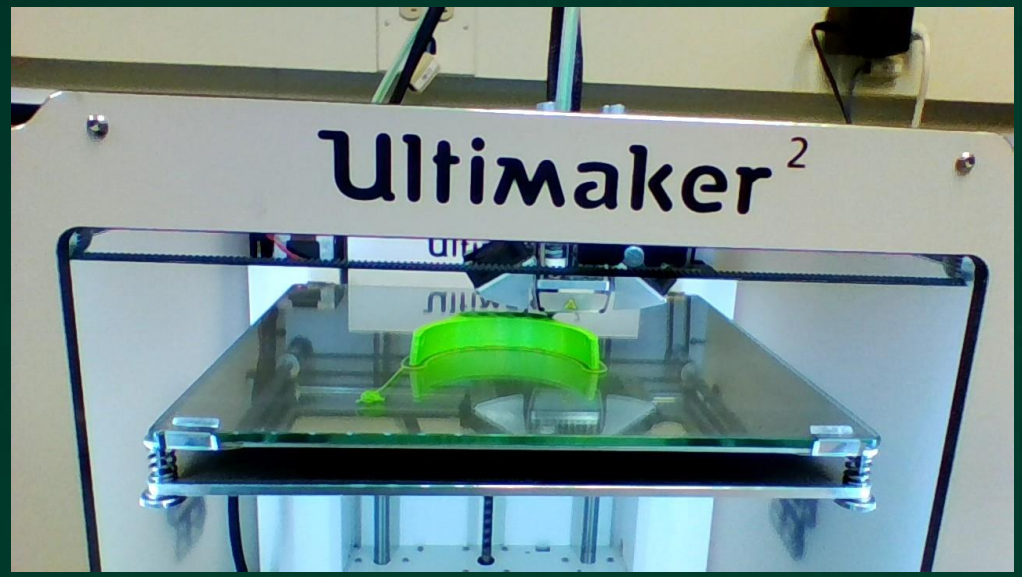
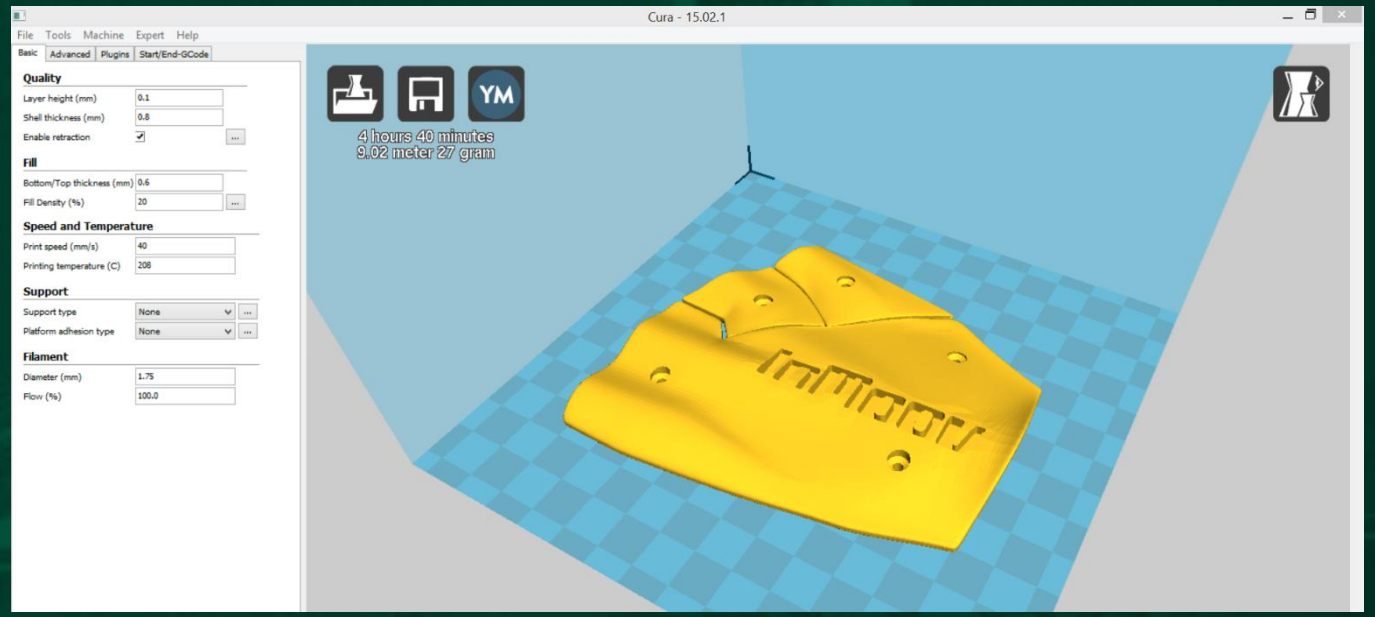
What is 3D Printing?





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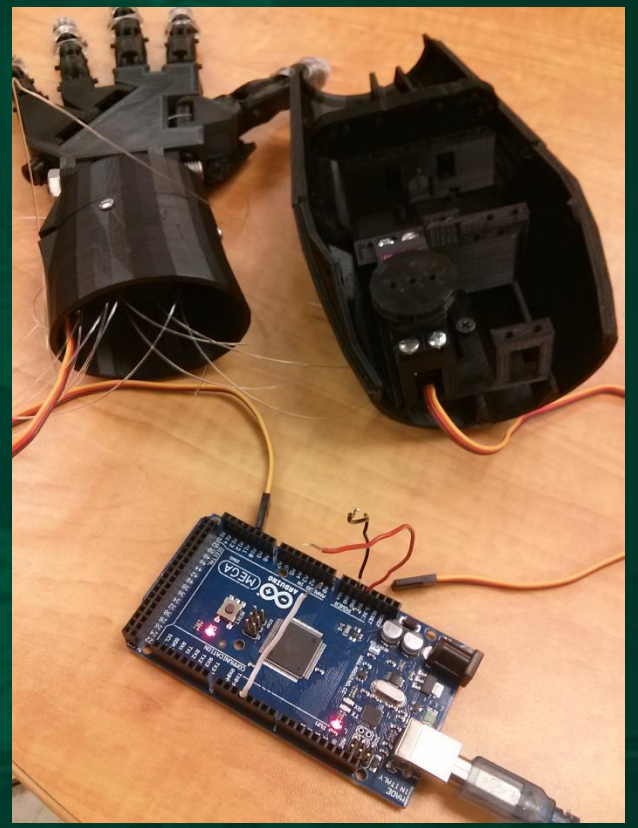
Why use InMoov?



http://www.inmoov.fr/gallery/

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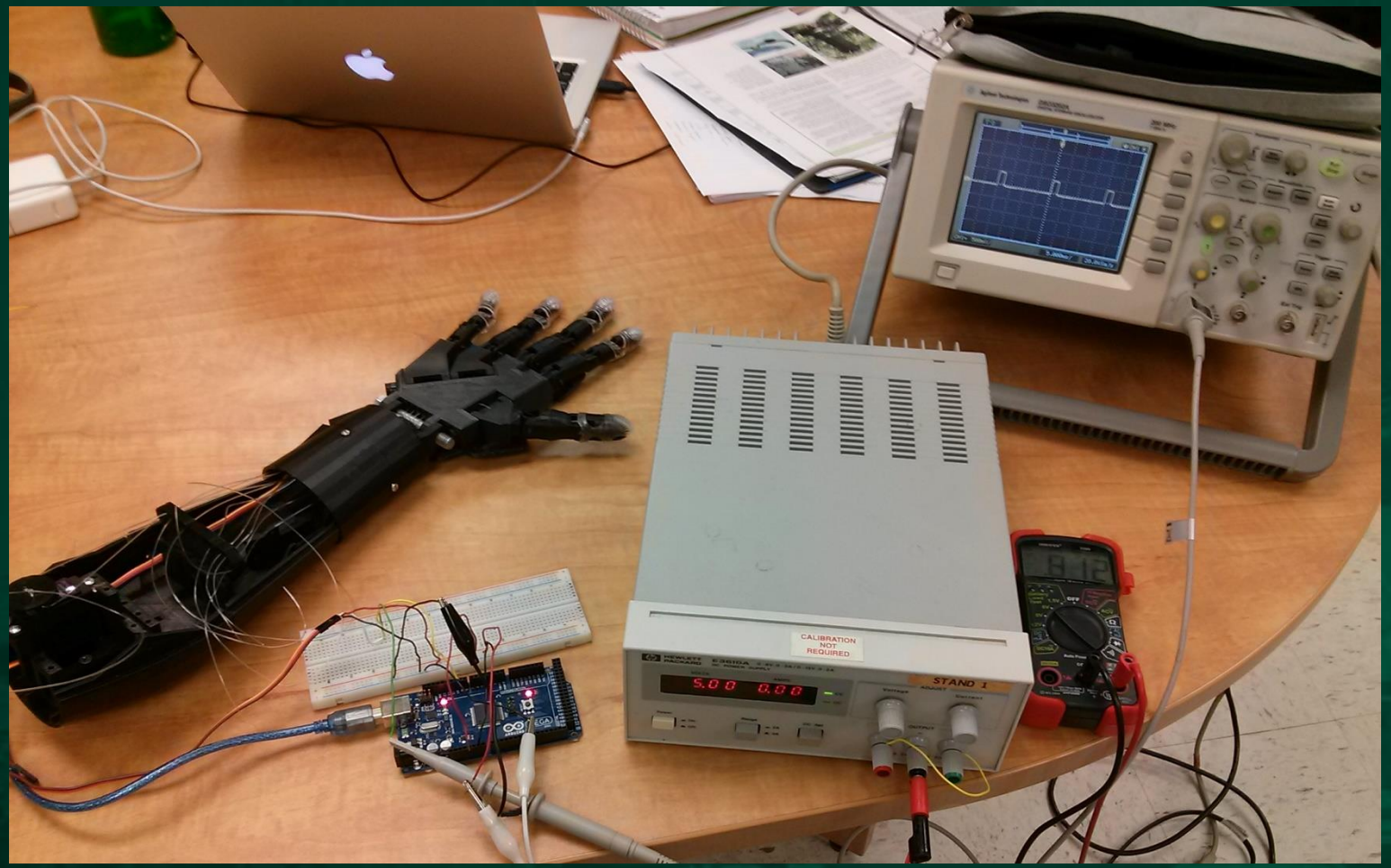
What I did with InMoov…



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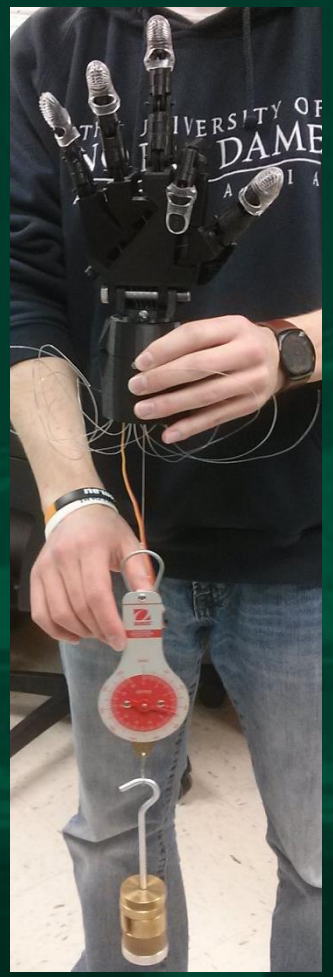
Experimental Setup:

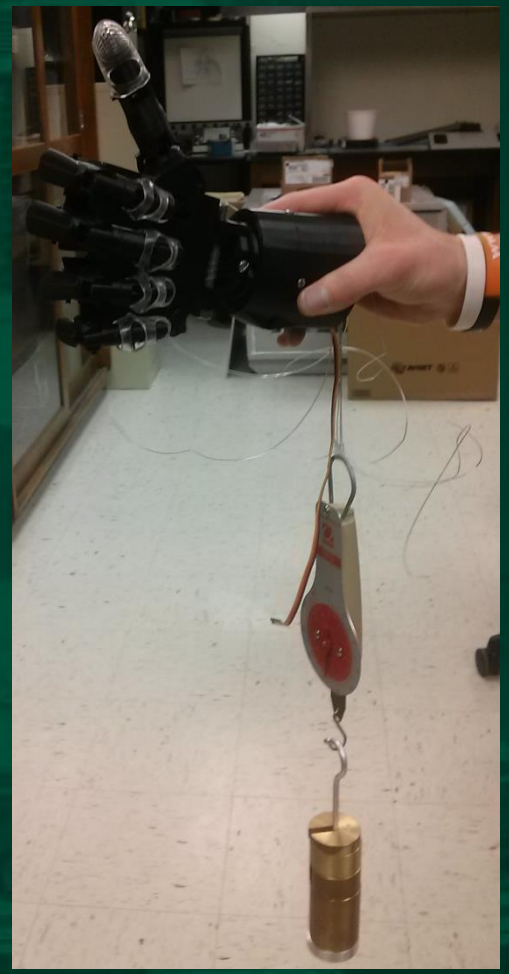
"Hang Loose"

"Ball Grip"

"Index Flex"



"Thumbs Up"



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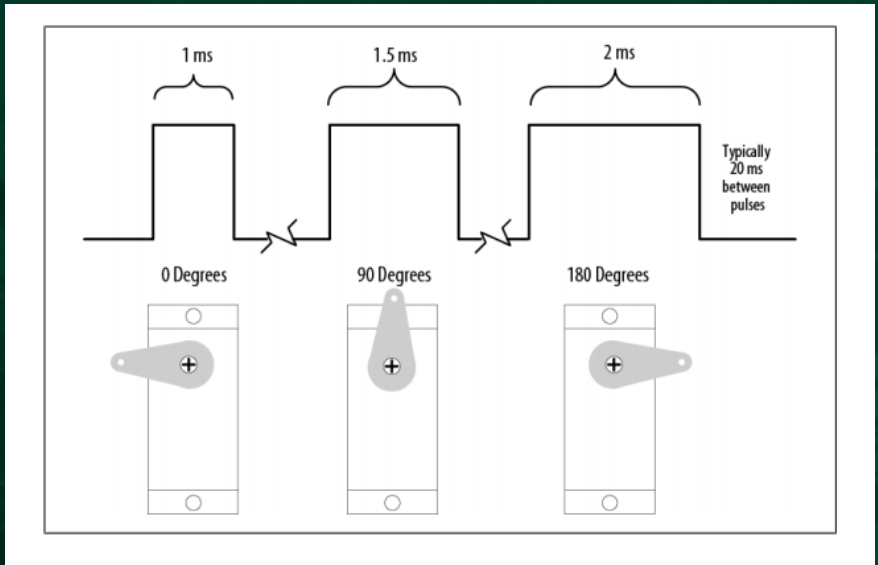
Crunching some numbers…

MG996R Servo Specs:

- Operating voltage = 4.8-7.2V
- Running Current = 500-900mA
- PWM period = 20ms
- Torque = 11.00kg-cm (at 6V)



Force Needed to Close the Fingers

Index Finger Flexion	**Trial 1**	**Trial 2**	**Trial 3**
Force (N)	6.0	6.0	7.0
Thumb Flexion	**Trial 1**	**Trial 2**	**Trial 3**
Force (N)	4.0	6.0	4.0
Middle Finger Flexion	**Trial 1**	**Trial 2**	**Trial 3**
Force (N)	6.0	6.0	6.0

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What is the application to prosthetics?

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How would an amputee use InMoov?

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Practical applications leading to worldwide collaboration

e-NABLE: A Global Network Of Passionate Volunteers Using 3D Printing To Give The World A "Helping Hand."

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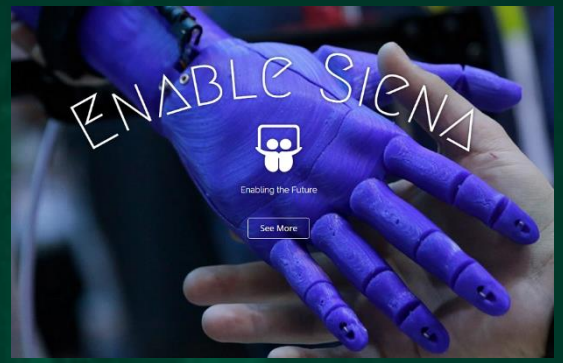
e-NABLE Siena College Chapter



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Future Research

- Optimize the software to hardware interaction with the integration of electrode connections to analyze the limits of brain-muscle control in subjects
- Develop my own design for a mechanical hand via e-NABLE

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http://enablingthefuture.org/upper-limb-prosthetics/the-limbitless-arm/

Thank you to:

- Dr. Cummings, advisor
- Dr. Bellis, associate advisor
- Dr. Weatherwax, reference/advisor for e-NABLE Siena
- Gael Langevin and InMoov
- Enabling the Future

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