Project Proposal for
VIP at Howard University

The Terminator arm

Brief Introduction of the Proposed Project

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Image Source:
http://moviehole.net/201143204summer-1991-special-terminator-2

- Objective
  - Design an inexpensive, non-invasive prosthetic arm controlled by electrical pulses from the brain

- Motivation
  - Cost: Traditional myoelectric prosthetics cost upwards of $3000, this would be assembled for less than one-tenth the price
  - Functionality: e-NABLE has open-sourced design for hand-prosthetics that are purely mechanical “Inexpensive & electrically activated prosthetics are rare”

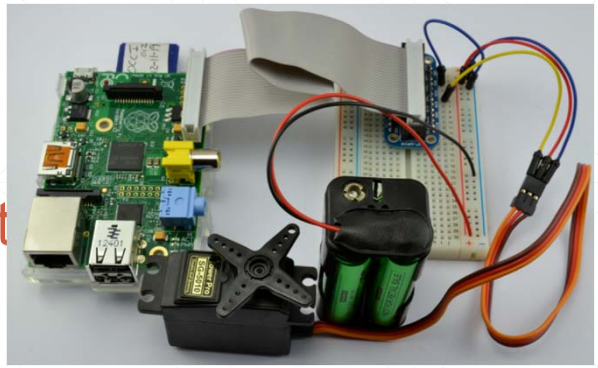
Image Source:
enablingthefuture.org

Limited Functionality of current Inexpensive hand Prosthetics

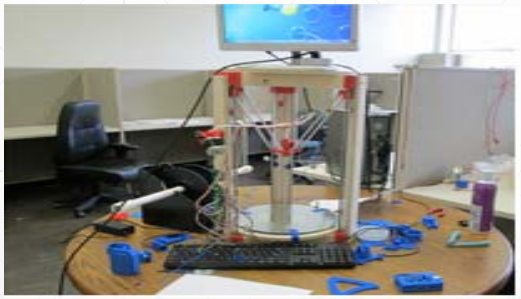
Attributes

- Successfully mimic basic hand gestures including finger position (i.e contraction/relaxation) & fist clench/Palm spread
- Prosthetic should be heat-sensitive
- Provide a “pathway” to development of inexpensive & highly functional prosthetic arms. Also, provides a great design experience for students

What's involved?



- EE: Motors, wires, current, sensors, alert
- CpE: Microcontroller, Programming, SDK/Interface for electromyographic sensor



- ME: 3D printing

Image Source:
www.adafruit.com

Proposed plans

- Assemble “Power” team of 8
  - Faculty (Prof. Anderson)
  - Graduate student (Ang Yu)
  - EE/CpE seniors (2 EE / 1CpE)
  - 1 ME student
  - 1 Underclassman
- Build Terminator arm
- *Demo (Projections)*

- Multi gesture, grip
- Catch a flying ball
- Respond to hot object

Image Source: https://www.google.com/search?q=team+of+people+putting+hands+together&rlz=1C1CHWA_enUS624US624&espv=2&biw=1517&bih=665&source=lnms&tbm=isch&sa=X&ved=0CAYQ_AUoAWoVChMIrbONx6nwxwIVCHU-Ch0nRgd9&dpr=0.9#imgrc=b4P-X0pM7o40HM%3A

Preliminary Outline (Susceptible to change)

- Team size?
- Demo specifics?
- Bring your ideas!
- Let me know if you're interested!

- *It's not going to be easy, but of course! we're Engineers!…*