



Construction and Application of Recreational Haptic Feedback

INTRODUCTION

- Haptic feedback can be described as technology that utilizes force and tactile experience. It is an example of immersive technology that communicates information via touch (Ambalina 2020).
- Technical fields such as undersea welding, hazardous material management, and remote medical procedure employ simple haptic feedback systems to improve telepresence.
- In fields such as medical surgery, doctors can't have a high cognitive load (the amount of working memory a person can hold at one time) or else they risk an unintended slip-up in their task. Haptic devices such as ours reduce the cognitive load of the user, making it easier to focus and concentrate on their task.

OUR CHALLENGE

- The challenge is to have a cost-efficient and versatile haptic feedback product that can be used for a variety of applied purposes.

OUR SOLUTION

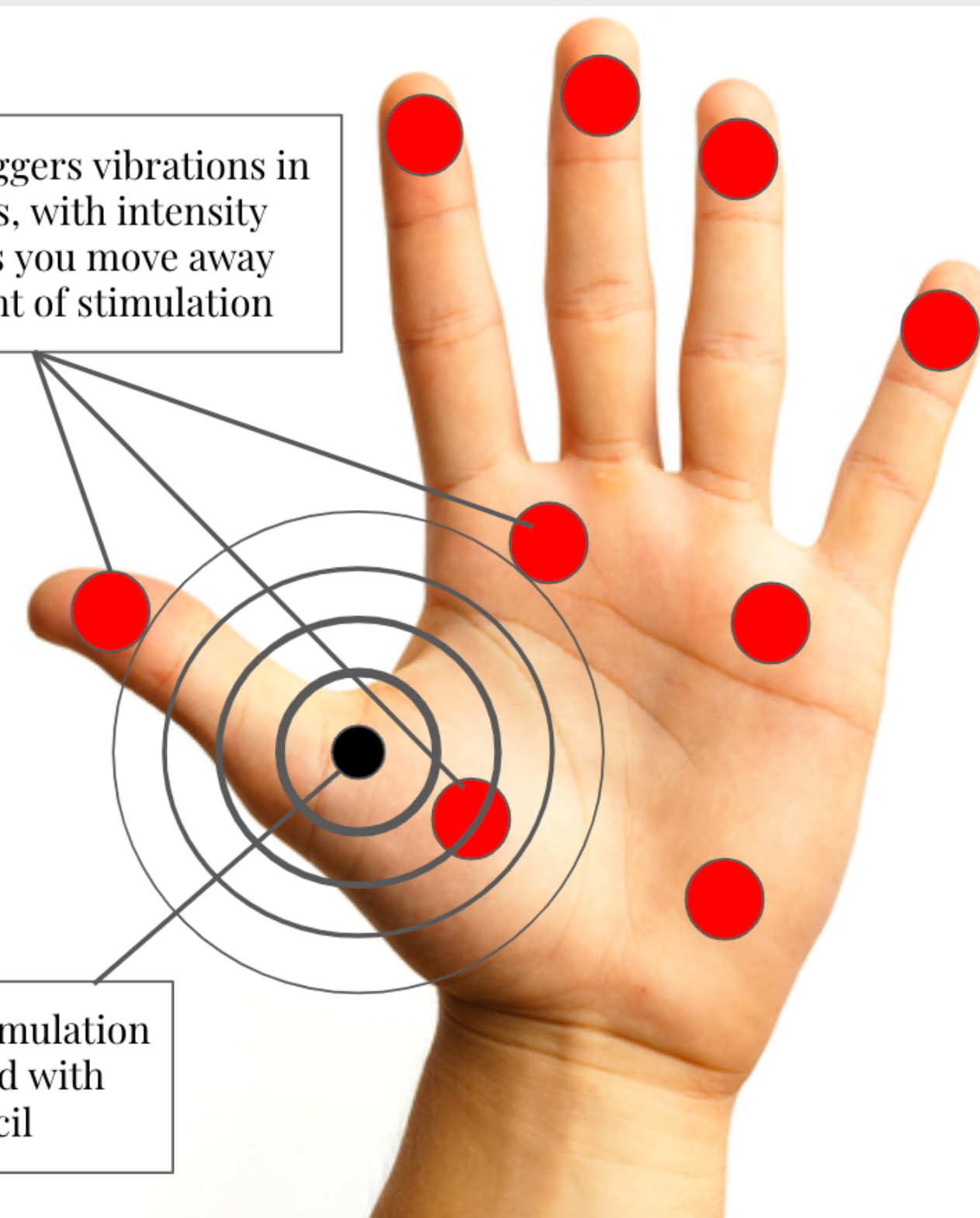
- Our solution is to apply cost-efficient and versatile components to a glove with vibrational feedback by utilization of Arduino and vibrational motors

CHECK OUT
OUR GLOVE!



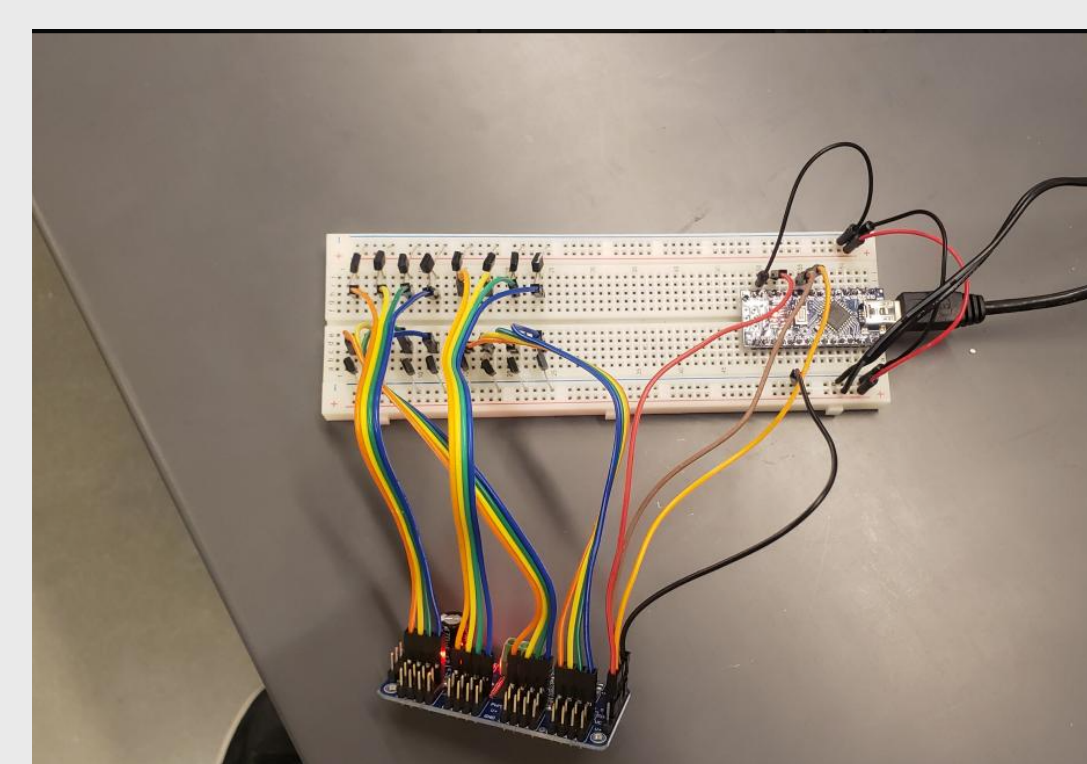
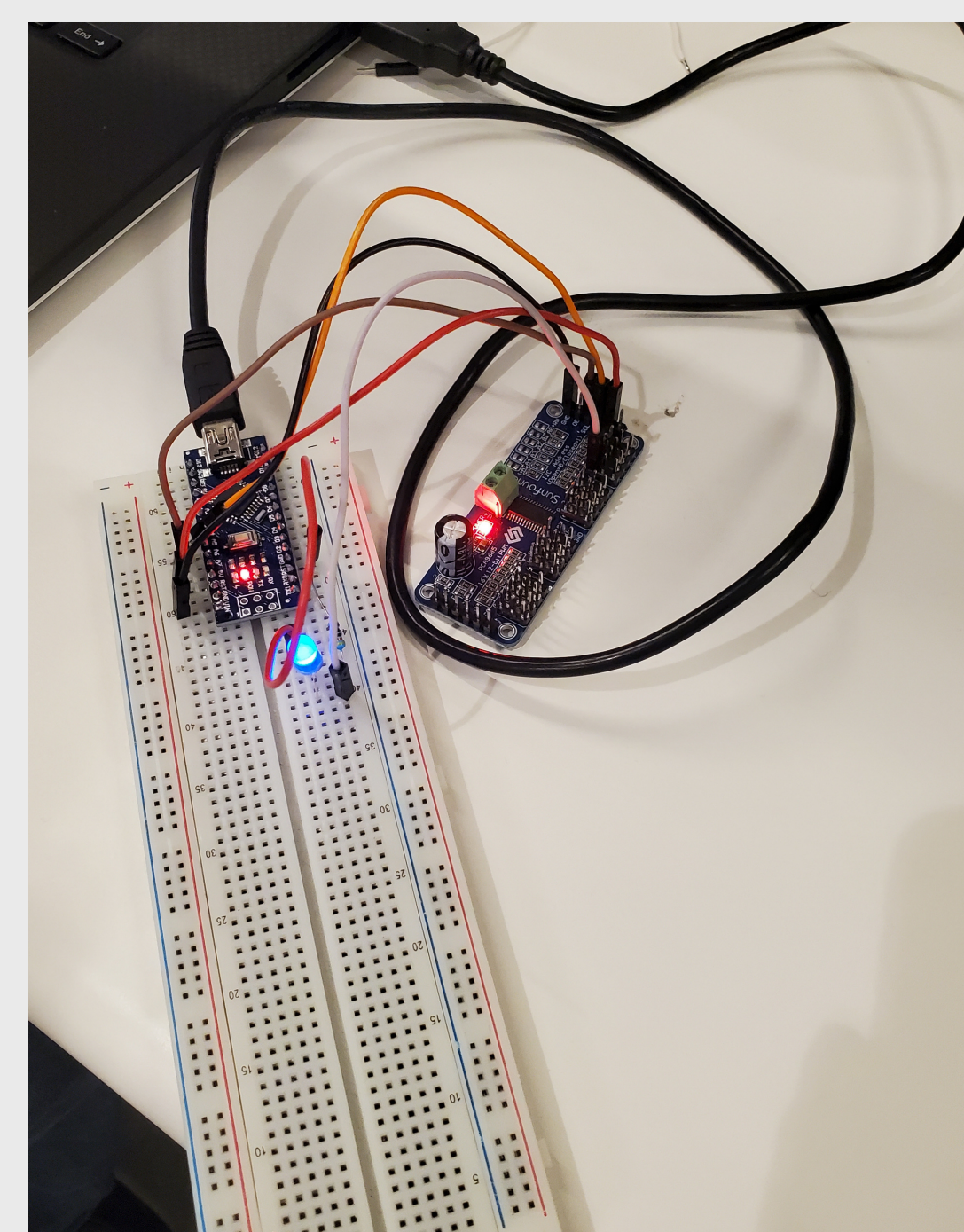
Stimulation triggers vibrations in nearby nodes, with intensity decreasing as you move away from the point of stimulation

Point of stimulation
e.g Poked with pencil



METHODOLOGY

- Vibration motors
 - Affixed to glove using hot glue & fabric
 - Positions identified with the help of Professor Anthony Lemus
- Coded on and driven by an Arduino Nano
 - Servo Driver driving the motors via NPN transistors
 - Altering the frequency and duty cycle of the PWM output alters the vibrational feedback strength



Circuit Board & Components



Glove Final Product (Above) & Glove Construction (Below)

AUTHORS

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RESULTS /FINDINGS

- Wanted to incorporate TENS Unit or Balloon Actuation systems for our glove.
- Found that the Vibrational System was much more applicable
- With these components, we have a successfully working recreational haptic feedback glove w/vibrational feedback

CONCLUSION

According to our findings, we found that a productive, cost effective, accessible, and versatile glove was a vibrational feedback-based glove using vibrational motors and an Arduino Nano. This system can be used for any number of applications where streamlined, low-cognitive-load haptic feedback is a necessity.

CITATIONS

Special thanks to Professor Anthony Lemus, Dr. Brian Hoover, Dr. Mario Stipcic, and Dr. Aaron Harrison

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