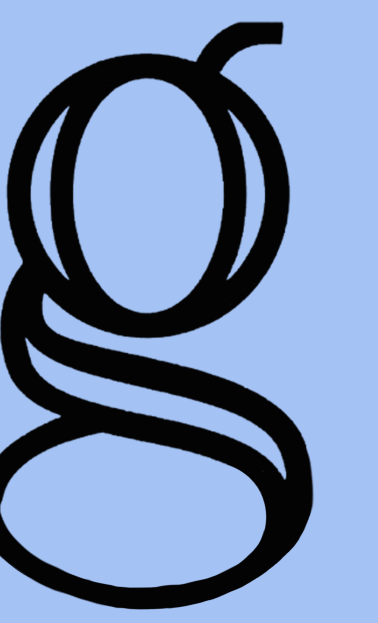




Team SIGHT: Finding Super-Optimal Haptic Feedback Conditions

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Introduction

- **Research Problem Statement:** There is a difference between perceived haptic sensations and actual haptic nature in haptic feedback
- **The Problem:** Blind people do not have a novel way of navigating unknown environments
- **The Goal:** create a sensory device that provides haptic feedback to solve this issue
- The device was designed to
 - send out an ultrasonic signal
 - measure the time for the signal to return upon hitting an object
 - produce haptic feedback proportional to that distance
- **Knowledge Gap:** users would interpret feedback to represent distances that were further or closer than what the device intended to convey.

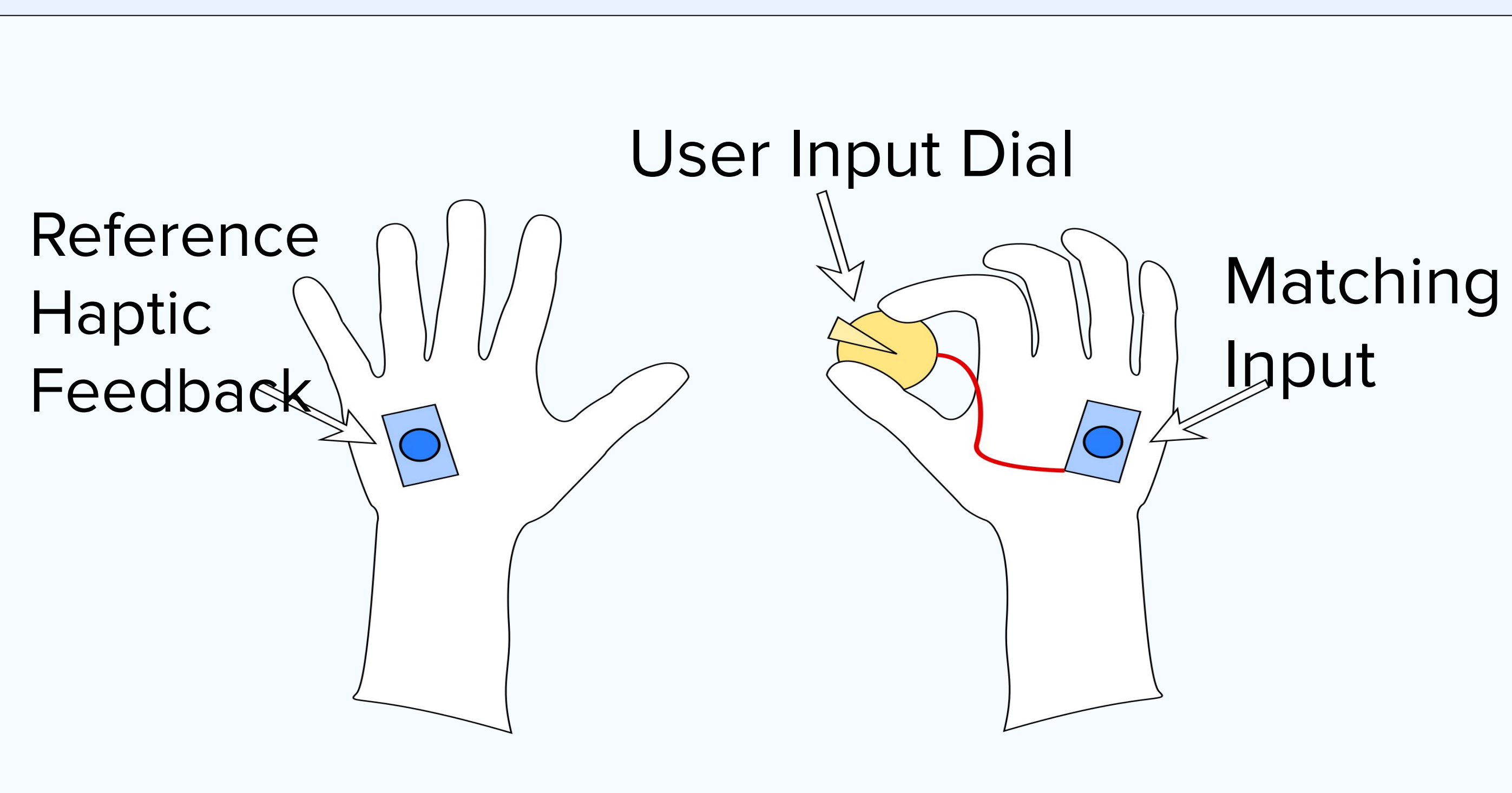
Research Question and Hypothesis

What is the most optimal condition for haptic feedback perception for blind individuals?

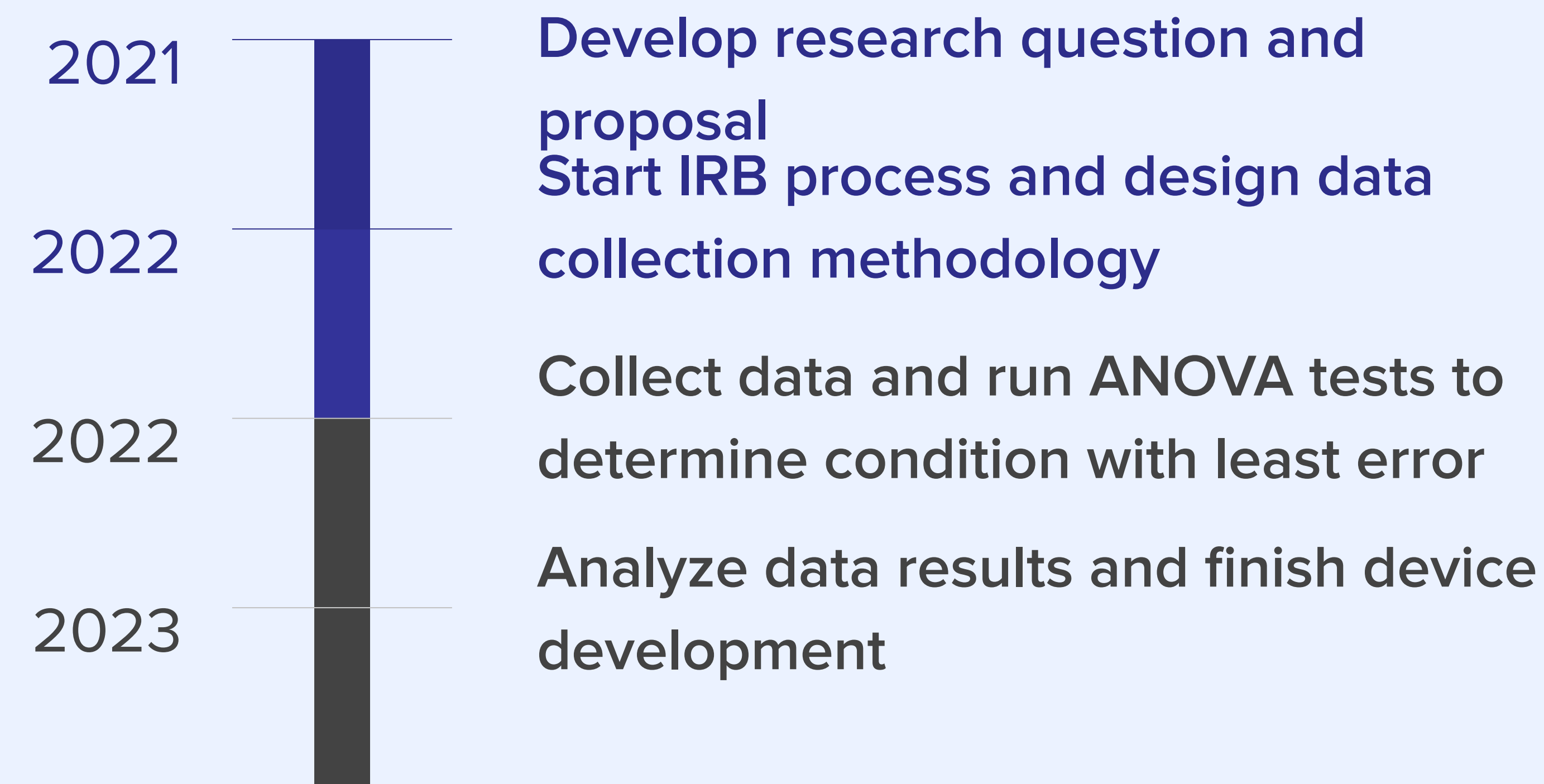
We came up with **three** different feedback conditions and we believe the **third** condition will have minimal error for haptic perception.

Methodology

- We will have a group of people go through all three conditions
- The participants will be given reference tones on their left hands
- They will be asked to match that tone on their right hands
- The reference tones will be changed by increments of 10%, and multiple trials will be conducted for each interval



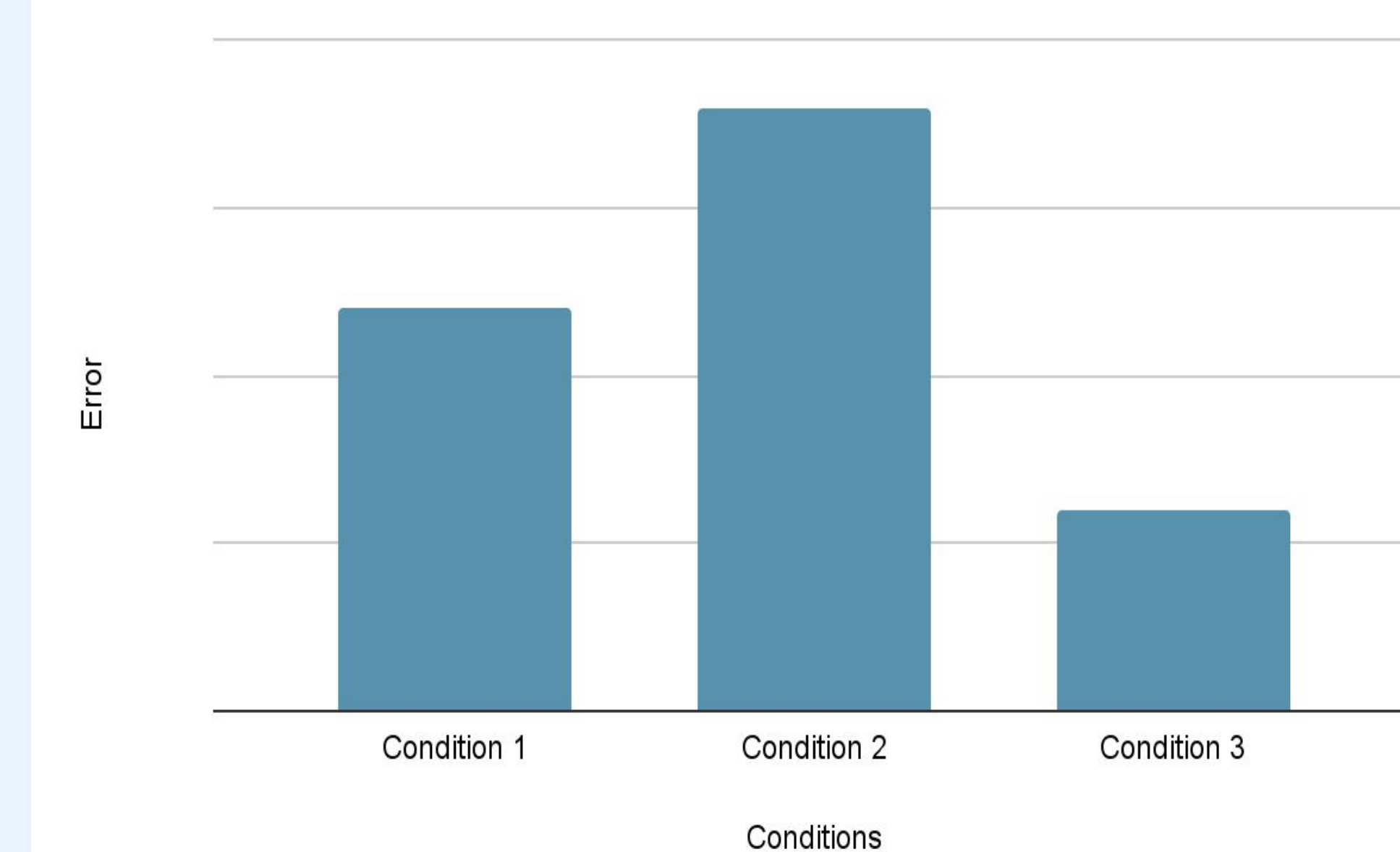
Future Research Timeline



Expected Data + Data Analysis

- We will collect raw data and then compute the sum of errors in perception vs actual signal by subtracting the two for each trial
- We will run these errors through an ANOVA test to find statistical differences between conditions
- The optimal condition will have the least error
- The best condition will be applicable to future iterations of the device and will also have applications in other fields relevant to haptic technology

Expected Perception and Error



Sources

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