USE

Week 4 - Testing

Testing

- Our situation is unique

- Did we solve the problem or not?

- For us, this involves controlled experiments, rather than user testing

Research questions:

- Are ultrasonic pulses interrupted by normal background noise?

- Are ultrasonic pulses good for navigation?

  - Can we demonstrate that pulses are different in the absence or presence of an obstacle?

  - Do ultrasonic clicks respond to their environment like snaps?

Research questions:

- Are ultrasonic pulses interrupted by background noise?

- Are ultrasonic pulses good for navigation?

  - Can we demonstrate that pulses are different in the absence or presence of an obstacle?

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Is background noise a problem?

- If we can't hear the clicks over background noise, then the clicks are not good for navigation

Original sample   Pitched down

Research questions:

- Are ultrasonic pulses interrupted by background noise?

- Are ultrasonic pulses good for navigation?

  - Can we demonstrate that pulses are different in the absence or presence of an obstacle?

  - Do ultrasonic clicks respond to their environment like snaps?

Can we detect an obstacle?

- If there is no difference with an obstacle in the way, then the clicks are not good for navigation
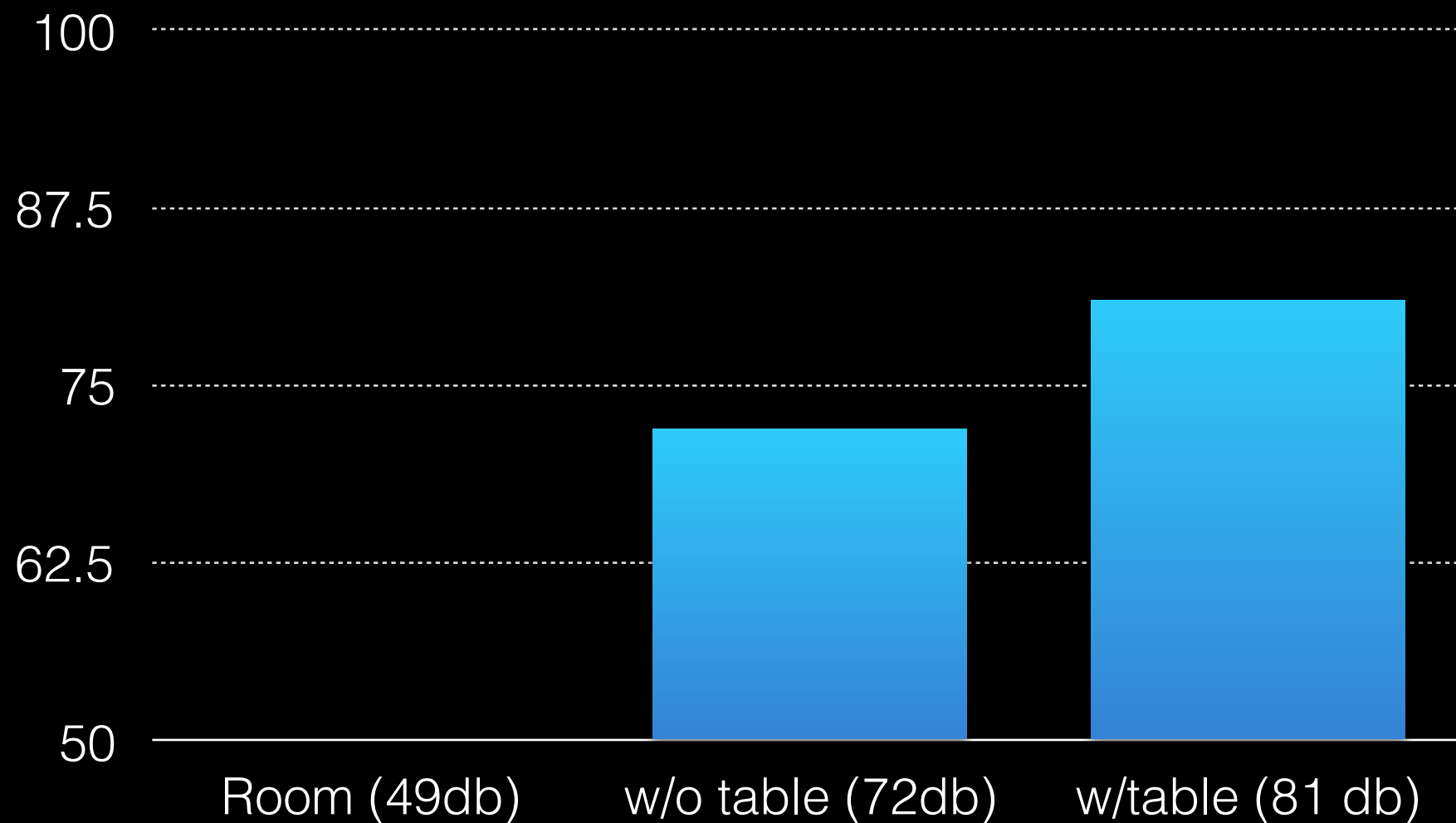
Our setup

Our setup

Can we detect an obstacle?

- If there is no difference with an obstacle in the way, then the clicks are not good for navigation

With table   Without table

Research questions:

- Are ultrasonic pulses interrupted by background noise?

- Are ultrasonic pulses good for navigation?

  - Can we demonstrate that pulses are different in the absence or presence of an obstacle?

  - Do ultrasonic clicks respond to their environment like snaps?

Testing method

- Record snapping and ultrasonic pulses and play them back at different points in a room

Results (part one):

- If we edit out the time between the sounds and just play one sound from each of the five locations right after the other, we get this:

Snaps   Clicks

Results (part two):

- Although each sample of snaps was relatively consistent, the clicks varied significantly.

Snaps   Clicks

- Therefore we are unable to conclude that snaps and clicks have the same properties

Research questions:

- Are ultrasonic pulses interrupted by background noise?

- Are ultrasonic pulses good for navigation?

  - Can we demonstrate that pulses are different in the absence or presence of an obstacle?

  - Do ultrasonic clicks respond to their environment like snaps?

Conclusion:

- Ultrasonic pulses can be used as a navigational tool, as there is an audible difference in the way they respond to their environment

- The signal quality of our prototype isn't great, and professional help would be necessary to create a final product

Next week:

- Finish up our prototype

  - We want to have a handheld version of what we showed last week

- Interview a visually impaired individual / field specialist