Visual-Motor interactions

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Underlying Goals

- Discuss the interactions between various neurological systems. Particularly How the vision and motor control work together.
- Question how we think about thinking.

Point of View

- Neural-Behavioral approach
  - How does the brain create and control behaviors?
  - How can we measure it?
  - What can we learn?

Some Quick Facts

- The brain is a squishy mass of seemingly randomly interconnected cells that sits in a protective fluid sack inside a skull
- There are areas that roughly correlate to various sensor and motor ‘systems’

Interactions

- How much feedback from the visual system does the motor control need?
  - If the visual system's input was impeded in some way, how would this affect limb movement?

An Experiment

- An LED and IR emitter unit is attached to a subject's right index finger.
- The room is completely darkened so that the only visual information the subject receives is from the LED.
- The subject is then tasked with reaching tasks under varying conditions (full visual, intermittent visual and, no vision conditions)

More on the Experiment

- The IR part allows us to measure lots of interesting things:
  - Time
  - Accuracy
  - Velocity
  - Movement Path
- We can use this information to infer how independently these systems work

Difficulties

- This experiment hinges on the fact that other systems aren't interfering with the movement.
  - The only hedge against this is that the task is extremely fast (<500ms)
- Inferring data is inferior to direct measurements
  - The physical design of the brain does not allow for meaningful direct measurements.

Bibliography

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