

Sensory Mapping

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Team Members

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Function:

The purpose of this project is to design a systematic method to accurately measure the surface area of sensory abnormalities.

Client Requirements:

- 1) Should give quantitative results**
- 2) Should be able to measure contoured areas of the body**
- 3) Results should be reproducible**

Design Requirements:

1. Physical and Operational Characteristics

- a. *Performance Requirements:* Measure more accurately than the current tracing method. Must function over all surfaces of the body
- b. *Safety:* Must have minimal skin contact due to patient sensitivities.
- c. *Accuracy and Reliability:* Accurate within 5-10% of actual surface area. Results should be reproducible. The cameras to be used can measure distances with an accuracy of less than one millimeter
- d. *Life in Service:* Device should last through the duration of the clinical trials
- e. *Shelf Life:* Indefinite, since the final product will not likely include disposable parts or perishable materials. Batteries in LED penlight will need to be replaced when they die
- f. *Operating Environment:* Function at room temperature
- g. *Ergonomics:* Must be comfortable and convenient for doctor use

- h. *Size*: No strict guidelines. Small enough for in clinical use and to allow easy portability
- i. *Weight*: The pen with infrared LED will weigh less than a pound
- j. *Materials*: Infrared motion capture equipment. Including: three infrared cameras, infrared LED pen, ground plane, USB cables, synchronization cables
- k. *Aesthetics*: Due to use in clinical testing, aesthetics are not of utmost concern

2. Production Characteristics

- a. *Quantity*: one working prototype
- b. *Target Product Cost*: \$500-\$1000 for working prototype

3. Miscellaneous

- a. *Standards and Specifications*: The prototype will be compared to the current tracing method that is being employed
- b. *Patient-Related Concerns*: Minimal skin contact
- c. *Competition*: Zcorp Zscanner 800