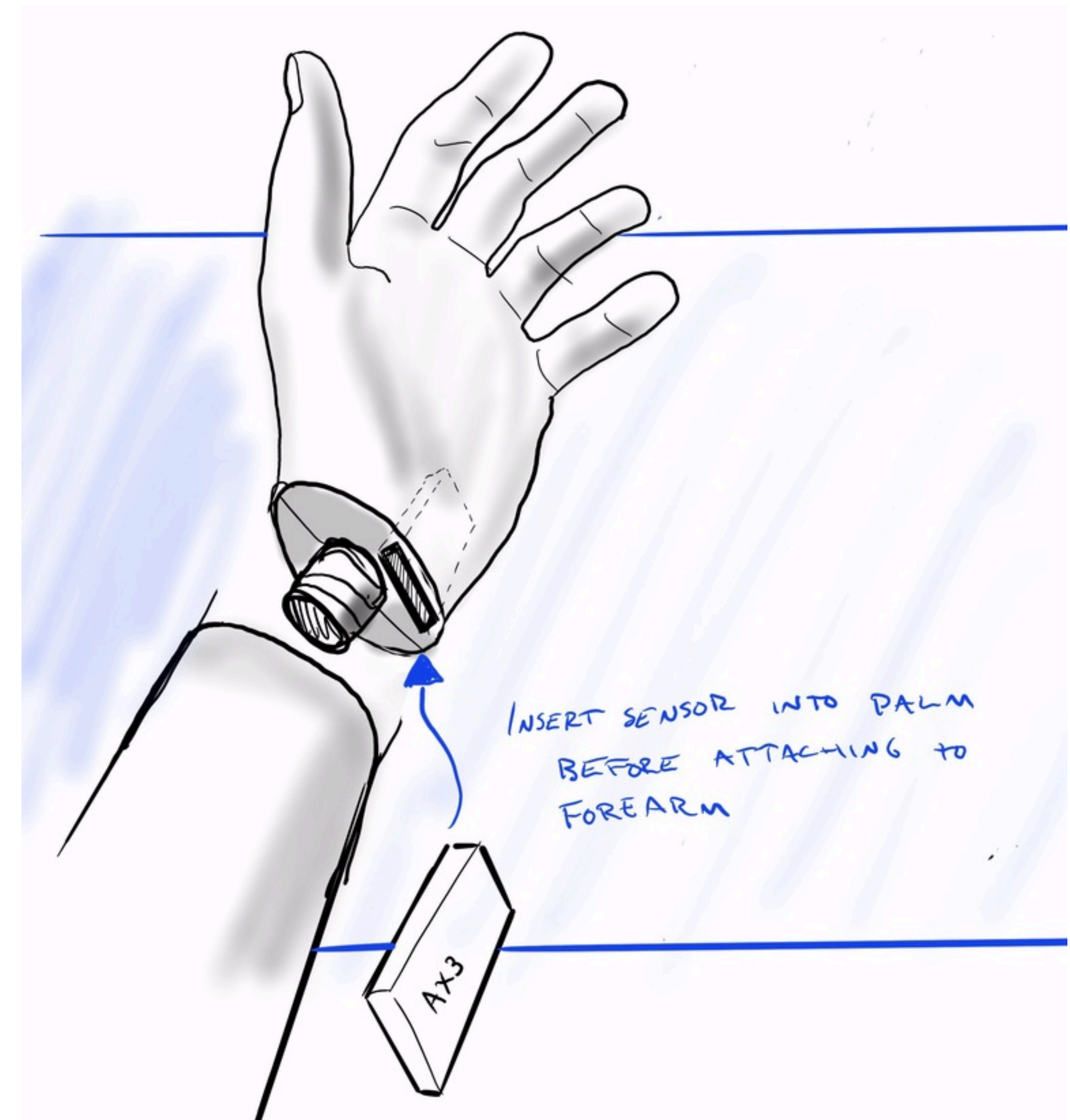


DS-SF-30: Final Project Proposals

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Proposal A: Instrumented Prostheses

- Problem: Currently, prosthetists rely on patient-reporting to assess device wear times and activities to establish level of usage.
- Data: By instrumenting a prosthesis with a 3 axis accelerometer, device motion can be recorded.
- Hypothesis: Different modes of usage will have different and unique signatures that can be classified for a more comprehensive portrait of device use.



Proposal B: Audio/Light Signal Processing for Welding Control



- Problem: Wire-feed arc welding processes can be difficult to automate for generalized geometries.
- Data: Arcs emit broad spectrum RF and visible light as well as acoustic signals.
- Hypothesis: Light, RF, and audio signals can be analyzed to classify different arc behaviors and improve weld quality.

Proposal C: Vibration Analysis for Machine State Diagnosis

- Problem: 3D printers often exhibit varying degrees of vibration based on different motion sequences.
- Data: Accelerometer data from machine frame or toolhead.
- Hypothesis: 3 axis accelerometer data can be analyzed to recognize different machine resonance states.

