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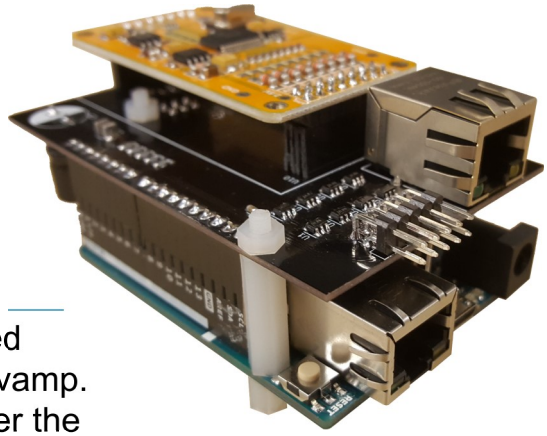
JOPEL DESIGNS JD
Project Portfolio

LED Hand Scanner

Brief

A traveling art experience was in need of a facelift. Part of the experience was user input gathered by hand scanners. The device would see constant public abuse, so it needed to be highly durable. It should be instinctive and easy to engage. Ultimately, the experience should be unique to every user, and moment.



Role

We were asked to replace the hand scanner. We were required to create a data stream that would work with the rest of the revamp. During contract negotiation we proposed including LED's under the touch sensors.The customer hadn't thought of it, but embraced the embellishment. We custom machined the cases in-house. Designed and built the PCB and wrote the initial firmware.

Consideration

Foremost, it must withstand the brutality of interacting with the public on a continual basis. Additionally, setup of the device should be easy and have a clean appearance.

Development

Power-Over-Ethernet (POE) provides communication and power delivery over a single cable, simplifying installation. Pre-assembled modules were leveraged wherever possible to reduce cost. A high accuracy analog to digital converter module was identified and an Arduino daughter board was designed for it. The daughter board also aggressively hardened sensor inputs against static (ESD) strikes.

Opperation

The stainless steel contacts measure the skins' galvanic response, or resistance. The user becomes part of an extremely low power, but dynamic voltage divider. Subtle differences in contact area and changes in sweat mean that every interaction is unique.

Timeline: 10 weeks
Delivered: Device, API documentation
Cost: ~$3500