SMART SKINS
An Embedded Sensor Network

Abstract
Smart Skins enables home automation in an object-oriented fashion where real-world objects are represented and interacted with as programming objects. Smart Skins does this in a cost-effective manner, using simple sensors for detection.

Objective
- Provide a platform through which a user can interact intelligently with their appliances
- Utilize a network of multipurpose sensing devices that transmit sensor data to an interface which, using a set of algorithms, displays the information in an easy-to-interpret fashion
- Optimize data collection & transmission to preserve battery life without affecting system performance

System Design

Evaluation & Results
- Smart Skins tested on washer, dryer and refrigerator
  - Washer & Dryer: on/off
  - Refrigerator: open/closed
- 10 trials were run for each appliance
  - Success rate for state detection shown in Figure 4

Figure 2. Smart Skin Device

Figure 3. State detection algorithm

Figure 4. Success rate of State Detection

Conclusion
- Achieved state detection of household appliances using simple sensors
- Lessened power consumption through limiting the number of POSTs
- Implemented an Interface that allows for push notifications via HTTP posts, text messages, etc.

Future Work
- Create a device with consumer level design
- Connect with other devices that allow action