The Smart Shower
The shower that completes your smart home

Project Overview

Description:
The Smart Shower allows users to control their everyday showers at the sound of their voice or the tip of their fingers. By connecting pre-existing showers to sophisticated smart home technology, homeowners can enjoy a showering experience like none other.

Issues with Common Showers:
- Shower handle position requires manual adjustment
- Shower water temperature varies
- “Cold Shock” when shower starts
- No current methods to add timers or limit shower duration
- Water is wasted waiting for shower to get to right temperature

Capabilities of Smart Shower:
- Turns shower on and off
- Controls and maintains temperature
- Primes shower to correct temperature
- Supports touchscreen and smart-home assistants
- Supports timed showers
- Reports water usage

Methods

1. Smart Shower Head: Shower head with integrated LEDs, flow sensor, temperature sensor, and shutoff valve. (Patent pending)
2. Shower Valve Motor: Servo that controls the shower valve to turn the water on/off and maintain the desired temperature
3. Smart Shower CPU: Controls the motor and LEDs and receives the sensor data from Smart Shower Head. Communicates with Touchscreen and Smart Assistant.
4. Touchscreen: GUI to turn on/off the shower, set the water temperature, display current water temperature, set timer, prime the shower, and display water usage.
5. Rock: To keep your dreams from floating away.

System Diagrams

Software

Hardware

Results:
The Smart Shower system works as expected. More specifically, the system we designed is able to:
- Measure the shower temperature within 2°F
- Adjust and maintain the shower temperature by turning the shower valve
- Interface with the user through Alexa and a touchscreen
- Measure water consumption
- Prime the shower to a set temperature

Future Work:
- Integrate with other smart assistants such as Google Home or Siri
- Allow for additional shower types other than rotational valve
- Design encasements for shower head and motor circuitry

Conclusion

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