FlipSwitch - Affordable, Easy, and Flexible Home Automation

Problem There has been an accelerating trend of new ‘smart home’ products that aim to automate, remote control, and augment existing home appliances and electronics. These products makes daily living more comfortable and can also be used to increase energy efficiency. However, even the leading products in this market are expensive, hard to install, and inflexible. Many younger people, such as college students, cannot afford to pay $50 for a single smart switch or even cannot change out the electronics in their temporary apartment.

Belking Wemo Switches
$49.99

Phillips Hue LED Bulbs
$199.99

Nest
$249.99

Solution Our system, FlipSwitch, is designed to automate the home for less money, in less time, and with less effort that other products currently on the market. Additionally, it does not require any modifications of the electronics of one’s home. This is all achieved with a simple idea: small modules with Bluetooth connectivity and small actuators that can physically control light switches and various other home electronics. The light switch is our core use case, being such a central element of the home and one that is so often interacted with. To automate the light switch, a module can be made with a very small servo set up to flip a typical wall switch, and can then be simply stuck on top of where the basic light switch is. The light switch can then be controlled from a smartphone’s bluetooth connection - easy!

Competition Other switch automation products, besides being more expensive, would require the old light switch to be removed and the smart switch to be installed instead. Our modules are much faster to setup and remove, and can be made with a $6 microcontroller and bluetooth chip, a $6 servo, and a small additional amount of other components. For as low as $20-$25, a large range of the home could be remotely controlled via the bluetooth now standard in smartphones. However, the use of bluetooth limits the control of modules to an area close to them and can be inconvenient. Therefore, we additionally intend to work on an FlipSwitch HomeBase that has both WiFi and Bluetooth connectivity which can be used to control home automation modules from anywhere. Using a Rasberry Pi and standard Bluetooth connectors, this could be created for as low as $75l. Additionally, this HomeBase can be used to integrate with other SmartHome systems to make our invention compatible with existing systems.

Target Broadly, this product is intended towards people who want to automate their home for an affordable price or without having to change their homes’ electronic systems. This is especially relevant towards younger people who have less income and move more often, making a less costly home automation system that is fast to install and remove ideal.