"SMART MIRROR"

SUBMITTED BY

A DINESH UDHAYSANKAR   4SH13CS001

BOBIN GEORGE VARGHESE   4SH13CS101

SURAJ K   4SH13CS109

VISHNU V NAIR   4SH13CS121

UNDER THE GUIDANCE OF

Mr. Rohan Don Salians   Ms. Komala B C

Assistant Professor   Assistant Professor

Dept. of Computer Science Engineering

Department of CSE, SDIT, Kenjar

Literature Survey

Cybertecture Mirror:

The Cybertecture Mirror may look like yet another vapor-rich concept -- what with its translucent overlaid interface and cloud-connected ways -- but it's actually just had its launch in Hong Kong, is set to start taking pre-orders in December, and will (hopefully) be shipped by the middle of next year. The brainchild of one James Law, this reflective renegade measures 800 x 500 x 50mm, comes with stereo speakers totalling 10W of power output, Wi-Fi, IP41 waterproofing, and fog-resistant glass. Before you ask if it runs Android, both the display and operating system are said to be proprietary, with the latter offering access to messaging, weather, calendar, and apps, such as an included fitness-tracking utility. Wen Wei Po reports a 60,000 HKD ($7,733) launch price and a very ambitious expectation that two million Mirrors will be sold over the first three years.

The New York Times' magic mirror:

In essence, the magic mirror replaces your standard bathroom mirror. The exact mirror/display being used isn't explicitly stated, but it is probably a Philips Mirror TV. Kinect's movement tracking and voice recognition provides the human-computer interface. Additional interaction is provided through objects (skin care products, prescriptions) with RFID tags that are recognized by the system. On the back end there is probably a standard Windows PC that uses the free Kinect SDK, and the NYT's developer API to serve up content.

The end result, is an awesome interface that can be used while you brush your teeth, blow dry your hair, or take your meds. Far from being a device that can only be used to surf NYT news, the magic mirror is basically everything you'd want from a bathroom computer. You can use it to check your email or calendar, but you can also use it to go shopping or check on your social networks. In the video, the main functionality that is demonstrated is the ability to recognize an RFID chip in a box of off-the-shelf drugs and then show you their directions for use; handy, and potentially life-saving in some situations. The mirror also has the ability to track your body and overlay clothes, if you want try something on before you buy.

Seraku's Smart Wash Basin:

Japanese company Seraku aims to make your network a little more ubiquitous with a prototype design for an Android-powered mirror. It uses RF proximity sensors to detect where your hands are placed so that you don't have to smudge it all up in order to check those sports scores, and the display unit here at Smartphone and Mobile Expo included a networked scale built into the floor. There's also a meter that displays water flow and temperature information on the mirror. Overall, it reminds us a lot of the Smart Window prototype design we saw from Samsung at CES, although not as responsive or as fully fleshed out.

An Android tablet is powering everything behind the scenes, but the display is a separate LCD monitor overlaid with a semi-transparent piece of reflective glass. The Seraku rep says that the company doesn't

have a commercial product ready yet, but if and when the product launches, Seraku sees two primary use cases for the mirror: reading the news at salons, and (somewhat inexplicably) filling out questionnaires at drinking establishments.

IoT Magic Mirror with Hosted Web Apps and Windows 10:

The magic mirror is basically a one-way mirror made "smart" by a simple LCD display which sits behind the mirror and displays white UI elements with a black background. When the display is on, you can see both your reflection and the white elements, allowing software to present relevant information while you get ready for the day. The screen needs to be readable through the mirrored surface, so the mirror uses a high contrast ratio of pure white on pure black. Lastly and most importantly, the user needs to see their reflection, so the central area of the mirror is kept clear when the user is logged in. The more-pressing information (weather, time, and a space reserved for alerts) are placed at the top of the mirror near eye-level, and other less-urgent information has been pushed down at the bottom, where it can be ignored or consciously consumed. Using the Hosted Web apps bridge, we turned our web app into a Universal Windows App, which not only give us access to Windows Native APIs but can also run across Windows devices, such as the Raspberry Pi 3 in our case. All the HTML, CSS, and JavaScript comes directly from the server, hence the term hosted. The mirror also has facial recognition capability which is powered by APIs provided by Microsoft's Cognitive Services. Magic Mirror leverages Microsoft's Cognitive Services Face API to match the user's face to their profile. The user creates a profile by adding some personal info and taking a selfie, which is then sent to Cognitive Services to get a unique identifier (a face_id) which is then stored in the Magic Mirror's database.

Nathan Patrick's Magic Mirror:

This is a smart mirror for your home. A few companies are researching them (Samsung, LG) and a few makers have made them. Check back later for more in-depth posts. For now, a summary: The mirror is made from a deconstructed 40? LED TV behind a one way mirror, so every black pixel is "replaced" with the reflection. Any image shines through as long as its bright, and the background is black. We used a couple of pieces of software to achieve this: Windows 10 with a desktop background that is black. We also use Cortana and voice recognition for opening apps, talking to mirror, etc. Rain meter lets you put icons, images, widgets, etc. right on your desktop. We used it to create the UI. Desktop Coral forces apps to open only in the small section above the UI but below the user's face.

FUNTIONAL REQUIREMENTS

Raspberry Pi: The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation. All models feature a Broadcom system on a chip (SoC), which includes an ARM compatible central processing unit (CPU) and an on-chip graphics processing unit (GPU, a Video Core IV). CPU speed ranges from 700 MHz to 1.2 GHz for the Pi 3 and on board memory range from 256 MB to 1 GB RAM. Secure Digital (SD) cards are used to store the operating system and program memory in either the SDHC or MicroSDHC sizes. Most boards have between one and four USB slots, HDMI and composite video output, and a 3.5 mm phone jack for audio. Lower level output is provided by a number of GPIO pins which support common protocols like I²C. The B-models have an 8P8C Ethernet port and the Pi 3 has on board Wi-Fi 802.11n and Bluetooth..

Raspbian OS: Raspbian is a Debian-based computer operating system for Raspberry Pi. It is now officially provided by the Raspberry Pi Foundation, as the primary operating system for the family of Raspberry Pi single-board computers.[3] Raspbian was created by Mike Thompson and Peter Green as an independent project.[4] The initial build was completed in June 2012.[5] The operating system is still under active development. Raspbian is highly optimized for the Raspberry Pi line's low-performance ARM CPUs.

Raspbian uses PIXEL, Pi Improved xwindows Environment, Lightweight as its main desktop environment as of the latest update. It is composed of a modified LXDE desktop environment and the Openbox stacking window manager with a new theme and few other changes.

LCD Display: A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in colour or monochrome.[1] LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as present words, digits, and 7-segment displays, as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

Two-way Mirror: A two-way mirror, also called one-way mirror, is a mirror that is partially reflective and partially transparent. When one side of the mirror is brightly lit and the other is dark, it allows viewing from the darkened side but not vice versa.

NON-FUNCTIONAL REQUIREMENTS

Hardware Requirement

- Raspberry Pi
- Acrylic Two-way mirror
- HDMI cable ☐ LCD monitor
- Wooden planks.

Software Requirement

- Raspbian OS
- Weather API
- Calendar API
- Map API
- News API