CUHK Convocation Outstanding Services and Creativity Student Awards 2014/15

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I am honoured to be awarded this year's CUHK Convocation Outstanding Creativity Award for the Natural Sciences. Here, I express my deepest gratitude to CUHK Convocation for the support. The scholarship gives me confidence and encourages me to continue my research and creation.

This project is aimed to turn smartphones into infrared universal remote controls. Infrared remote is the main channel for the users to give commands to electrical Appliances, like televisions, air-conditioners, fans and DVD players. However, it is clumsy to own many IR remotes at home. Switching remotes is needed when using different Appliances. Changing batteries from time to time. Remote buttons worn out and give no response. These are the typical problems with ordinary remotes. This project is to give a solution to solve these problems.

Smartphone is the most common personal device throughout the world, thus, by turning it into a universal remote, commanding appliances would become much convenient. A single smartphone can replace multiple remote controls, which can save your troubles in switching remotes. You would never need to replace your remote's batteries anymore, save your money and reduce pollution caused by batteries.

The project is divided into two parts, a transceiver and an App. Most of the smartphones do not have an IR module installed, therefore an external device is needed to deal with IR receiving and transmitting.

By using the 3.5mm audio jack on the smartphone as a connector between the transceiver and the smartphone, we can generate electronic signal with desired frequency. Next the electronic signal will trigger the infrared LED on the transceiver to blink at the corresponding frequency, so as to emitter infrared signal.

With a precise control in the signal frequency, we can simulate any kind of remote's signal. The goal of the project is to take control of all infrared capable appliances.

This is the emitter which is used to connect with smartphones and produce infrared signal.

Award presentation