PHOTO: PRABIR DAS

Worry-less Wireless

Yeasin Kabir Bhuiyan and Inzamamul Islam, two students from North South University have developed a wireless power application that can be used as a standard mean of charging portable devices

FAYEKA ZABEEN SIDDIQUA

Mobile phones, smart phones more precisely, were invented to make our lives easier. But how many of you are tired of seeing your phones die halfway through the day while you search for phone chargers to recharge your phone?

I am one of those people who keeps losing battery chargers. Thus, every other week I find myself in a mobile store, buying a new charger that suits my phone. I also keep a cell phone charger in my handbag all the time, just in case, although I have to find a socket first to plug it in. I am sure my experience is not unique and you must have suffered the same agony sometime or the other.

The idea of a wireless charger than can charge not only your phone but also your laptop, tablet, any portable device, is no doubt the most exciting piece of news for smartphone users. More so when it is being designed by your own countrymen.

In 2012, Yeasin Kabir Bhuiyan and Inzamamul Islam, students from the Department of EECS at North South University, had thought of inventing a wireless power transfer system to make the charging process more user-friendly.

Their idea was simple: to eliminate the physical cable connection between the charger and the mobile phone.

"As a part of our senior thesis, we decided to present the idea to Dr Hafiz Abdur Rahman who appreciated it very much", remembers Inzamamul gratefully.

"With his encouragement and guidance along with our hard work, we have finally invented a prototype of a functional wireless charger device," says one of the inventors. This system can be designed and implemented on any surface so that the users can charge any of their portable devices by installing them on top of the charger with a receiver attached to their devices.

Using the magnetic induction technique they have developed this prototype of a wireless mobile phone charger. "Total design of our experiment is divided into two parts, transmitter and the receiver," explains Yeasin showing their little device.

"The transmitter part consists of a DC input power source, an oscillator, capacitors, resistors and inductor coils working as the transmitting coil. The main function of this part is to generate AC wave from DC input create magnetic induction through the coils.

With their mentor Dr Hafiz Abdur Rahman's encouragement and guidance along with their hard work, Yeasin and Inzamamul have invented a prototype of a functional wireless charger device. PHOTO: PRABIR DAS

The receiving part consists of an inductor coil working as a receiving coil, voltage regulator and voltage rectifier. When the receiver coil is kept above the transmitter coil energy gets transferred from one coil to the other using inducing voltages through inductive coupling" Yeasin demonstrates.

"Inductive charging uses electromagnetic field to transfer energy between two objects, which is usually done with a charging station," adds Inzamamul. "Energy is sent through an inductive coupling to an electrical device, which can be able to use that energy to charge batteries or run the device."

The concept that they have developed has an operating distance up to 2 cm between charger and mobile phone. Power transfer of 1.2 W is accomplished which is sufficient to charge a mobile phone. "The charger design is simple enough and it does not interfere with the mobile phone functionality while the device is charging," opines Yeasin

This 6-inch device is a bit complicated as it is fully loaded with copper wires, circuits, mini alligator clips and coils.

"We need to keep in mind that this device is handmade and all the necessary tools were not readily available," Yeasin explains. "On top of that, we have made it following the cheapest approach, spending less than $1." The size of the transmitter and the fact that it still needs a regular power adapter makes the use of the charger impractical at the moment. However, when the product is mass produced in an automated factory, everything will be accommodated into a small chip that can be easily fitted in the receiver, he adds.

According to the inventors, in order to avoid phone and transmitter unit getting overcharged and to identify phone models and generate correct charge ratings bluetooth communication system can be used. With the integration of bluetooth communication and implementation of smart charging, wireless charger has a chance to change the way we use our phones and to become a useful tool.

So what's next?

"Now that we have the prototype completed and it is working just the way we thought, we are thinking of approaching our local mobile phone manufacturers so that they could help us taking it to a mass level and to have it automated factory made", says Inzamamul. "We have not yet filed any patent for our product."

"We take pride in the fact that our local brands like Walton and Symphony have emerged as the fastest growing mobile handset brands in the Bangladeshi market within a short period of time," says Dr Hafiz Abdur Rahman, Associate Profeaaor, Department of EECS.

"These local mobile phone manufacturers can help these young initiators tweak the design to be mass produced more efficiently. A little support can go a long way towards having more innovative young individuals in our society."

A technological innovation like this should largely be supported through private patronage, believes Dr Rahman. " If it is used properly, this concept has the potential of doing wonderful things like device to device charging and power sharing, which means charge can be transferred from laptops to phone or tablets to phone and even phone to phone" comments the proud mentor.

Our technology opens a wide field of wireless charging applications to low powered devices with low cost and greater efficiency. It also has the potential to help power electric cars, says Yeasin. ■