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DT based Smart Energy Level Detector

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Abstract—This project is to detect the energy level in human body by inserting a chip which will notify the energy level in the Android Mobile Phones. Now a days disease are ruling the world. This project helps the people who can't go often to hospital and take rest. Many old age people get stroke, attack without their knowledge. By the proposed project we can ensure and prevent the disease before itself. This project majorly helps the old age people. They are not aware of what disease attacks them at what time. As they are becoming older, they are not concentrating on their health and its nature that after getting older, people suffer a lot by health issues. So, this energy level detector will frequently check the energy by inserting the microchip and it will notify with the help of Mobile. So, older people don't want others help for their health care. This cannot stop one's death but it can extend one's life span.

Keywords- Design Thinking, Energy, Patient monitoring

I. INTRODUCTION

Now a days various disease and viruses attack us without our knowledge. Mainly old people suffer from this. They couldn't even find if they are attacked by a stroke or something else. We think that our project will help people. We are going to insert a biochip under our skin by a kind of vaccination. It will be in our hand and energies like physiological conditions, temperature, blood pressure, glucose, and respiration for both diagnostic and therapeutic procedures can be detected. Then it will have a specific ID number which will be connected in our phone through an app through which we can get information about our health condition. The chip does not have any battery and cannot transmit a signal by its own. They are basically passive, they sit there asleep. They can never tell the locations. They are activated when touched with smartphones. This means that they cannot be used for tracking anyone's location. For any upgradation of the chip, we don't want to take it outside each and every time. Instead, we can update in our smartphone. So, old age people does not require one's help, they themselves can take care of their health and they don't need to go to the hospital often..

II. LITERATURE SURVEY

RFID technology began in World War II with an "Early Identification Friend or Foe (IFF) systems where it was possible for Allied fighters and anti-aircraft systems to distinguish their own returning bombers from aircraft sent by the enemy." (Garfinkel & Holtzman, 2005, p. 15) Then shortly after WWII, Henry Stockman, who was an engineer, had a paper published called "Communication by Means of Reflected Power" where he came up with the idea for passive RFID chips. (Garfinkel & Holtzman, 2005, p. 16) In 1960, RFID technology was used to identify and monitor hazardous material and nuclear power. (Miller, 2007) The first commercial application with RFID was the Electronic Article Surveillance for anti-theft purposes. There were early attempts in 1960 in RFID technology. For example, in 1963 Robert Richardson created remotely activated radio frequency powered devices. In 1968 J. H. Vogelman was working on Passive Data Transmission Techniques Utilizing Radar Beams. Then in 1969 Otto Rittenback was working on Communication by Radar Beams.

III. DESIGN THINKING

Design thinking is a methodology applied to the design of innovative products and services, whose main premise is focusing on the customer in order to detect their real needs, continual validation and iteration so as to offer exactly that solution which provides value. Design thinking is a non-linear, iterative process that teams used to understand the users, challenge assumptions, redefine problems and create innovative solutions to prototype and test.

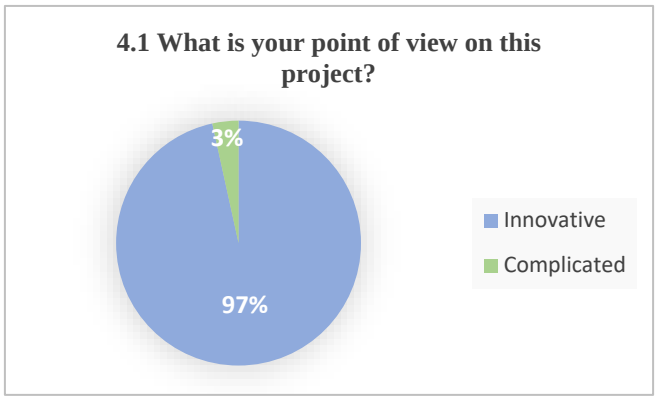
Involving five phases--

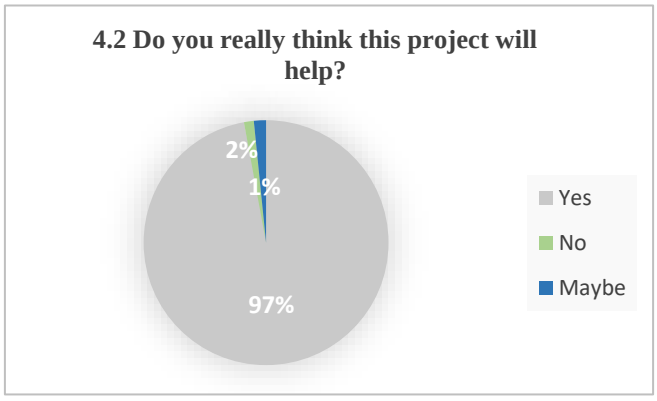
- Empathize
- Define
- Ideate
- Prototype
- Test

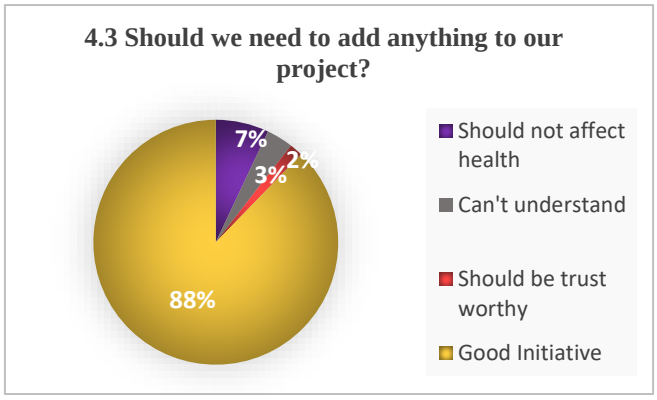
IV. EMPATHY

Empathize is **the first stage of the design thinking process**. Design teams conduct research to get personal grasps of their users' needs. They set aside assumptions to obtain insights into the users' world by observing and consulting with users. This way, they can understand users' experiences, motivations and problems.

Through empathy, we are able to put ourselves in other people's shoes and connect with how they might be feeling about their problem, circumstance, or situation.







V. DEFINE

- Our project users are mainly old peoples.
- They are not aware that what disease attack them at what time.
- As they are becoming older. They are not concentrating on their health and it's nature that after getting older people are suffered a lot by health issues.
- So, we think that our project will help them by notifying in mobile.

VI. IDEATE

- Advocates of the tiny chips say they are safe and largely protected from hacking.
- Around the size of a grain of rice, the chip typically are inserted into the skin just above each user's thumb, using a syringe similar to that used for giving vaccinations.
- Implanting chips in humans has privacy and security implications that go well beyond cameras in public places, facial recognition, tracking of our locations, our driving habits, our spending histories, and even beyond ownership of your data, which poses great challenges for the acceptance of this technology.

VII. PROTOTYPE

7.1 SYSTEM DESCRIPTION:

7.1.1 BIOCHIP ARCHITECTURE:

The biochip implant system consists of two components, a transponder and a reader or scanner. The transponder is the actual biochip implant. The biochip system is radio frequency identification (RFID) system, using low frequency radio signals to communicate between the biochip and reader. The reading range or activation range, between reader and biochip is small, normally between 2 and 12 inches.

7.1.2 SIZE:

The size of Biochip is of a size of an uncooked rice grain size. It ranges from 2 inches to 12 inches

Fig 7.1 Size of the chip
Fig 7.2 Insertion of the chip

7.1.3 COMPONENTS:

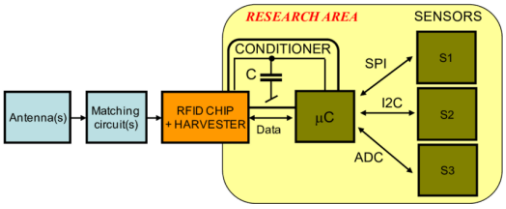
a) The Transponder,
b) Computer Microchip,
c) Antenna Coil,
d) Tuning Capacitor,
e) Glass Capsule

7.1.4 COST:

Biochips are not cheap, though the price is falling rapidly. A year ago, human biochips cost $2000 per unit. Currently human biochips cost $1000, while chips for mice, yeast, and fruit flies cost around $400 - $500. The price for human biochips will probably drop to $500. Once all humans are well characterized and all functional human SNP's are known, manufacture of chips could be standardised.

7.2 DIAGRAMATICAL REPRESENTATION:

7.2.1 BLOCK DIAGRAM:



7.3 HARDWARE DESCRIPTION:

7.3.1 THE TRANSPONDER:

The transponder is the actual biochip implant. It contains no battery or energy of its own. It has a very long life upto 99 years. It is inactive until the reader activates it by sending it a low power electrical charge. The reader reads or scans the implanted biochip and receives the data from it. The communication between the biochip and the reader is via low frequency radio waves.

7.3.2 COMPUTER MICROCHIP:

The microchip stores a unique identification number from 10-15 digits. The storage capacity is limited, capable of storing only a single ID number. The unique ID number is encoded via a laser onto the surface of the microchip before assembly. Once it is encoded it can never be altered. The microchip also contains the electronic circuitry necessary to transmit the ID number to the reader.

7.3.3 ANTENNA COIL:

This is normally a simple coil of copper wire around a ferrite or iron core. This tiny radio antenna "receives and sends" signals from the reader or scanner.

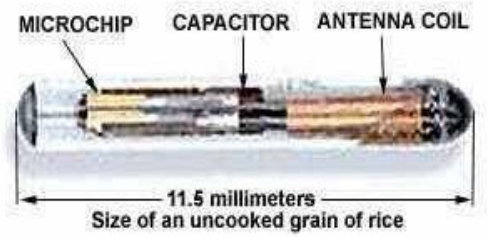


Fig 7.4 Components of the biochip

7.3.4 TUNING CAPACITOR:

The capacitor stores the small electrical charge sent by the reader, which activates the transponder. This activation allows the transponder to send back the ID number encode in the computer chip. As the "radio waves "are utilized to communicate, the capacitor is "tuned" to the sane frequency as the reader.

7.3.5 GLASS CAPSULE:

It is a small capsule measuring 11 mm in length and 2 mm in diameter, about the size of an uncooked grain. The capsule is made of biocompatible material such as soda lime glass. After assembly, the capsule is hermetically sealed, so no bodily fluids can touch the electronics inside. As the glass is smooth and susceptible to movement, a polypropylene polymer sheath is attached to one end of the capsule. This provides a compatible surface which the bodily tissue fibers bond or interconnect, resulting in a permanent placement of the biochip.

7.4 ADVANTAGES AND DISADVANTAGES

7.4.1 ADVANTAGES:

- The ability to detect various energies in our body through blood.
- Notifies to our mobile phones.
- Oldest people can be independent on others.
- Knowledge about energies and their required levels.
- Epidemiological tracing.
- Interagency collaboration.
- Drive policy for diagnosis and disease control.

7.4.2 DISADVANTAGES:

- May take a long time for the sugar patients to recover from the injury.
- DNA chip can't be fabricated at high density and mass production is limited.

VIII. TESTS AND RESULTS

IX. CONCLUSIONS AND FUTURE SCOPE

The immediate prospects for biochip technology depend on a range of technologic and economic issues. Current biochips are of necessity disposable because the current devices are not physically robust. Nucleic acid probes tend to break away from a supporting glass plate. A decade from now, this problem may have been better addressed, making the chips more reusable. On the other hand, it may be better to manufacture biochips so inexpensive that they can be used once and then discarded. Another issue is biochip versatility. Current biochips are single-purpose, hardwired devices. Even if future biochips do not become programmable, in the fashion of computer chips they may become usable for multiple purposes. It seems desirable for biochips performing different tests to have an output

detectable by the same readout device. A race is underway to create a biochip platform or motherboard capable of handling a wide range of biochips, irrespective of the internal details of a given chip's function. In particular, two companies, "*AFFYMETRIX* and *MOLECULAR DYNAMICS*", have formed the Genetic Analysis Technology Consortium, or GATC (a name that represents the four nucleotides that carry genetic code in DNA). The hope is to establish industry-wide standards for the reading of biochips. Most biochips are 2D arrays of sensors placed carefully in a grid arrangement. The position of the sensor on the chip determines its function. To place the sensors in precise co-ordinates, sophisticated and expensive microdeposition techniques are used. They are developing a biochip that indexes sensor function to its shape, instead of its position on the chip. Thus, the sensors can be placed anywhere. The shaped sensors are made via novel contact lithography. The benefits of this approach are multifold:

- The sensors can be batch produced and then assembled together in parallel, providing high yield.
- The sensors can be packed very tightly together, unlike those deposited with microdeposition systems.
- The sensors are 3D in nature, and thus provide a higher signal than 2D sensors of other chips. Almost any chemistry can be incorporated into the sensors. Most biochips use only one type of chemistry.

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