Anthony Rom
April 13, 2021
Mobile Application II

# Integration of IoT in Society
## Benefits of Internet of Things

## Abstract

Humans interact with a variety of different objects whether for work or in our daily lives. The internet of things (IoT) is the bridge that connects the internet to the objects that we interact with. The capabilities of IoT spread across a vast number of fields that can improve the workplace or the user's lifestyle. Which society will acquire many benefits and propel new developments.

## Introduction

IoT can be viewed as an ecosystem of objects. These SMART devices have many functions that can collect data and transfer the information over the internet. This data is then processed and analyzed to initiate more functions to do its task. This input of information can be done through human to machine or machine to machine interaction. These connections have given rise to the automation of labors. This quick chain of gathering and submitting of data can be beneficial to many fields. Our daily lives have been enhanced and simplified many tasks. IoT can improve user experience and quality of care in the medical field and healthcare. The development of SMART cities will enhance daily life and improve living experiences. The future of IoT will play a large role in the growth of society. The advancement of agriculture can be done by automation through IoT. Manufacturing will be impacted and produce a smoother workflow.

## Daily Life

Smart devices are on the rise. The most used Smart device is the Smartphone. It allows us to access the internet as well as maintain its main function to communicate with others over large distances. Many mobile applications have given the smartphone more functions such as entertainment, learning opportunities and connection to other devices. Which is mostly used to act as the main manager. Such other devices include the SmartWatch and numerous devices for a functioning smarthome.

### Convenience and Comfort

The development of IoT for home and daily life is fueled by convenience. The ease of access gives users more time to focus on hobbies and family. The smartwatch is similar to the smartphone with a more limited spectrum of functions but caters more to individuals or scenarios where it is not possible to take out a phone. The user is still able to answer calls, send texts, use some applications and act as an alarm system. The Applewatch has a built in fall detection that senses a hard fall and lets the user choose if an SOS is required. For the home,  there are many appliances that have integrated IoT. Such devices include Smart lights, SmartTV, Smart fridge, smart laundry and smart cameras. All of these devices can be controlled through the phone. Users are able to turn on, off or dim the lights from anywhere in or out of the house. Smart TVs allow the user to play/pause, record and browse from the comfort of one's sofa. The smart fridge has a large display that can be used for searching up recipe videos and playing music. The fridge also has a built in camera that shows a real time view of the contents. This function allows you to know what you have or need to grab when out at the store or deciding what to make. It is also energy efficient through controlling the temperature with its built in sensors. Safety is key when it comes to comfort. With smart cameras you can see the perimeters of your home,detect movement and send alerts right to the phone. IoT gives users the opportunity to achieve convenience and comfort at the tips of their fingers.

## Medical System

The internet of Medical Things(IoMT is a critical addition to improving and digitizing healthcare. The health system can be broken into two focuses; the preventive care and curative care. The preventive care is to save one's health before the damage occurs. This type of care consists of small neighborhood clinics. While curative care is to repair one's health after the damage has been done. This type of healthcare would take place in hospitals. IoMT can improve the cost, productivity, and work efficiently in customer experience. In the study, *Medical Internet of Things and Big Data in Healthcare*, "These devices and mobile apps are now increasingly used and integrated with telemedicine and telehealth . . .". Many patients have started to use mobile applications and it shows as the best method to share individual information. This change would introduce digital health coaches and workers.

### Curative Healthcare

The life expectancy of humans have increased due to the advancement of medicine and technology. As people age their health deteriorates which calls for constant monitoring of their health.  The Internet of Medical Things (IoMT) in the curative field is the system of a series of devices that obtains and submits data and images to a medical repository used by healthcare providers.  Quick response and real time monitoring plays an important role in the medical and healthcare field. Hospital staff must pay close attention to alerts from the various sensors on the patients. There are reduced costs and risks for human interaction with machines.  This interactivity allows for fast collection and analysis of data. This data can help medical staff to track and prevent chronic illnesses.

### Preventive Healthcare

IoMT allows quick readings of users' health through wearable technology. An example of this is the Apple Watch or fitbit. In the Apple Watch, there are built in sensors that can measure your heart rate and an accelerometer and three dimensional gyroscope. The accelerometer tracks vibration and motion . The gyroscope measures the rate at which the device rotates around. Such tools allow the device simple movements that are used for manipulation of your devices horizontal and vertical orientation. Importantly they control

the Applewatche's fall detection. The Apple Watch can be used to measure how much time spent in a workout session and can calculate the number of calories you have burned over the time course. Additionally with the heart rate sensor, the watch can detect high or low heart rate and alert the user of abnormal heart rhythms. The watch also provides loud noise detection to notify the user about risks of hearing loss. The newer model Apple Watch will provide a blood oxygen sensor allowing for measure of how well oxygenated blood is being transported through the body. It provides the most necessary functions for health and emergency situations.

## SMART Cities

The development of SMART cities are in development and have taken part in some experimental areas in the world. Smart cities will be designed with sensors, networks and applications to collect data on energy usage, transportation, pollution and other fields. These sensors will gather traffic volume and patterns in the time of day to provide a measure of time to travel or plan construction of roads. For convenience, it will help people find empty parking lots. This data will be open-accessed information for citizens and businesses to use to provide a smooth flow for one's own purposes. These sensors would also be able to measure the pollution that's roaming through the city's air. The city Boston was one of the rist to experiment with smart initiatives. The plan is centered around citizen participation (crowdsourcing) called *participatory urbanism* to collect and send city information to its citizens. In New York, sensors are being used to collect data on full trash/waste bins, manage charging kiosks and enable internet connectivity in phone booths. Amsterdam provides smart lighting with dimmable LEDs for pedestrians and cyclists with the use of an app by increasing the lights brightness when passing by. Smart cities

## Manufacturing in SMART Factories

The importance of manufacturing is creating the product as perfectly possible and doing so in a steady flow. IoT in this field creates a more automated environment that devoids or decreases the need for human interaction. The machine to machine connection through IoT will allow the manufacturing to be self correcting and provide proactive maintenance. This interaction will reduce the human interaction to possibly dangerous equipment or

tasks. The company Whirlpool links plants together to achieve a zero-waste facility through smart development of its products and creating products with Smart functions. Smart factories will allow companies to make insights and optimize for a long and smooth workflow.

## Conclusion

The development and future of IoT will benefit society across the many fields. The human lifestyle will become more convenient and comfortable to live. The medical and healthcare fields will be able to work more efficiently at giving the best care through the help of IoMT. SMART Cities will push healthy and collaborative lifestyles amongst both human to human, human to machine or machine to machine interaction for a more fluid environment. SMART factories will create self correction automation for more efficient manufacturing and will reduce any risk to humans.

## Works Cited

P. Punithavathi, K.K. (2019). A lightweight machine learning-based authentication framework for smart IoT devices. *Information Sciences*.

Guest Writer (2019). IoT-Based Mobile Applications and Their Impact on User Experience. *UI & UX Design*.

Benjamin M. (2019). How IoT-Based Mobile Apps Impact User Experience. *DogTown Media*.

T.Thamaraimanalan, P. (2018). Smart Garden Monitoring System Using IOT. *Asian Journal of Applied Science and Technology* .

Dimiter V. Dimitrov (2016). Medical Internet of Things and Big Data in Healthcare. *Healthcare Informatics Research*.

Fayez Qureshi, S. (2018). Wearable Hardware Design for the Internet of Medical Things (IoMT). *MDPI*.

Limin Liu (2018). IoT and A Sustainable City. *Energy Procedia*.

Martin Strohbach, N. (2015). Towards a Big Data Analytics Framework for IoT and Smart City Applications. *Modeling and Optimization in Science and Technologies*.

Badis Hammi, L. (2018). IoT technologies for smart cities. *IET Networks*.

Aditya Gaur, S. (2015). Smart City Architecture and its Applications Based on IoT. *Procedia Computer Science*.