**Learning at Third Level**

**Assignment 1**

Title: Internet of Things

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**Introduction**

In today’s world, usage of the Internet is rapidly increasing thanks to the increased presence of numerous sensors and software installed into numerous technological products, i.e. smartphones. These items are constructed on a series of sensors which collects data to interpret it and to transfer data emerging from sensors to “machines on the ground” in order for the devices to instantly connect to the “thing” (Household appliances, vehicles). This process is forming part of the revolutionary project that is known as the Internet of Things (IOT) (Burrus, 2014).

According to Kevin Ashton (British technology developer), the IOT is defined as a means of identifying different characteristics of the “real world” including temperature and lighting by various gadgets. It allows extra statistics to be created and “consumed” by mechanisms where the standards of life can be enhanced by machine to machine communication through the use of different appliances (Ashton , 2009 cited in Duncan, 2014).

IOT originated from the works of Mark Weiser (Xerox PARC member) as the company wanted to discover what would occur when countless items had inexpensive “computing power” inserted into these devices which became recognised as “ubiquitous computing” (McEwen & Cassimally, 2013, p. 23).

The IOT is becoming more important for millions of families as “76% of adults” are connected to the Internet through a vast range of broadband subscriptions from providers which are reducing their prices for data constraints. Therefore, it will be easier for Wi-Fi connected households to use their online connections in order to communicate with the Internet-connected devices (laptops, tablets, smartphones) (McEwen & Cassimally, 2013, p. 15).

The author will focus on the advantages and disadvantages of the IOT since it is clear that the IOT will have a pivotal role in changing industries and sectors forever positively and negatively. As well as that, life will be made more simple by the presence of IOT since its functions will carry out jobs for humans in homes worldwide. However, the security and privacy of the world’s population cannot be ruled out as it is possible that devices could gain access into the personal lives of individuals.

**Usefulness of Internet of Things in homes**

Deore et al emphasises the importance of IOT on 21st century homes by explaining how “Smart Homes” feature different layers which include Home Environment (HE) and Remote Environment (RE) (K.Deore, et al., 2015, p. 898). The RE is amounted to the users who are permitted to retrieve the system through the use of the Internet on the smartphone applications by means of Wi-Fi or 3G/4G. The HE contains Home Gateway and a “hardware interface module”. Deore et al indicates that the Home Gateway offers data conversion services for the suggested architecture. Therefore, these layers are significant in powering a smart home because the phones that have Wi-Fi embedded within them can operate the architecture in order to acquire and command the home appliances (K.Deore, et al., 2015, p. 898).

Duncan establishes the opportunities that will be taken from the IOT plan which will have an extraordinary impact on future houses (Duncan, 2014). The efficiency of “device-to-device communication” is clearly indicating how houses could possibly carry out many jobs for families. For example, when people walk into a certain room, the motion sensors will switch on the lights and when an individual gets up in the morning, the technology within the house and the embedded sensors can communicate between each other to open the blinds and to turn on the television. As a result, it can be concluded that the IOT concept in houses could make daily life more undemanding due to the capability of the smart gadgets to commune with each other especially to a core hub for usage when the devices are located everywhere (Duncan, 2014).

**Advantages and Disadvantages of IOT on Industries and Sectors**

N Tongay highlights the significance of “sensor data computing” (SDC) which has an impact on the “transport and health sectors” when data is used to transport statistics for these industries. Large information quantities must be managed as the details require updates and access for the dispatchment of services in order for the data to be available effortlessly so the information can move smoothly. Once the “real-time” data is needed by industries and sectors, the distribution of material within the computer is hindered because of “Wireless Sensor Networks” not having the ability to command “real-time” execution. As a result, N Tongay reasons that the services must gain facts and figures from the computers so that SDC succeeds in making the delivery of services more simple for industries worldwide to avoid postponements for global products (N Tongay, 2016).

Scott and Ketel clarifies the prospects that IOT can create towards the raw material industry and the construction business. For instance, IOT is inclined to develop transmissions between “devices” and the utilisation of acquired information. It is evident when factory apparatus relays with raw material stockpile as this improves the standard of life where objectives are conducted by various modern products and data is accumulated. Scott and Ketel continues to show the purpose of the IOT for assisting the construction industry as the concept has the capacity to rescue the lives of individuals. The sensors that are now incorporated with sensors alerts drivers of incoming dangers and orders the motorists to reduce speed through the “wireless internet in the car”. Thus, the IOT has a key role in accompanying the construction industry and car services due to the IOT’s central participation in saving the lives of motorists and its position in the simple management of factories (Scott & Ketel, 2016).

**Security and Privacy**

Gupta and Sapna maintain the viewpoint that privacy is a particularly worrying situation in relation to the IOT because there is a threat that the data which is kept in cloud storage could be examined by anybody at any time. In fact, this is due to the frequency of cyber-attacks that causes harm to the computers and IOT. The biggest trouble that affects IOT security according to the two authors here is the process of “Backdoor” which can create a bad effect on updates of the IOT as “vendors” are responsible for this security attack. Thus, the authors here recommend that “privacy policies” should be designated for each network in order to prevent the information from being viewed which will ultimately result in the administration of privacy for the “IOT Applications” or the “infrastructure of IOT” (Gupta & Shukla, 2016, p. 316).

A challenge that is highly difficult for software developers today in the management and security of the IOT is “software vulnerability” where Zhang reasons the inability of modern devices to “make use of current authentication or cryptographic methods” because of “resource” limits that are in action at the moment (Zhang, cited in Gupta & Shukla, 2016). Zhang argues that the data within the IOT including “real-time data” is fully “personal” as the amount of vulnerable “data readings” about the owners of these accessories and their intimate spaces should be respected as private belongings due to the risk of a leakage that could expose the owner’s location, current wellbeing and the daily life of the owner(Zhang, cited in Gupta & Shukla, 2016, p.317).

**Conclusion**

**Reference List**

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