Internet of Things (IoT) research paper

This research is on the growing trends of Internet of Things and the influence it can have on society. Internet of Things, is the concept of technology interacting with each other and making determinations based on the information that’s gathered. For example, smart lighting adopts part of the concept of Internet of Things. Smart lighting uses sensors to collect information around its’ surroundings to optimizes energy efficiency. The way it optimizes energy efficiency is by detecting movement. If there is no movement for an extended amount of time, the system can assumed that there is no one present; thus, the lights will then be turned off depending on its’ current state. However, if movement is detected the system will assume there is someone present and the lights will be turned on. The concept of Internet of Things has been around since 1985 when it was introduced by Peter T. Lewis. Since then industries and researcher’s involvement have increased in their efforts to make IoT omnipresent. The increasing involvement could be due to the internet being ubiquitous and the current advancement in technology. There are many forms of technology or products that are based on the idea of Internet of Things today; such as, security systems, energy management systems for homes and cities, environment monitoring systems, and many more. These devices are designed to detect changes to its environment and use the internet to exchange information with other devices. Thus, creating a mass network of data for devices to connect to and help it make changes based on variables it wouldn’t have been able to get access to. Therefore, these devices can intelligently make decisions based on the information it receives. Currently, businesses are searching for a way to use IoT as a home security system to help improve in detecting intruders and shortening the response time from authorities. As of now home security systems using IoT still present too many security risk and vulnerabilities. Due to these vulnerabilities, determining if IoT can be used to improve current home security has yet be decided. However, Many manufacturers and industries have begun to incorporate automation in their production to reduce waste, and increase efficiency. Energy management is one of the major benefits of Internet of Things. Manufacturers and industries are given more control over how it manages it resources by using sensors to collect information like production efficiency, energy efficiency and waste levels. This energy management principle provides manufacturers with real time monitoring over multiple variables that effects it overall production. Thus, manufacturers and industries can make the appropriate adjustments to quickly restore efficiency resulting in less pollution from production, and reducing cost while maximizing profit.

Internet of Things is an important topic and relevant to society because of the endless possibilities it can create. This research topic has the potential to help solve and monitor real-world problems that would otherwise go unnoticed. This can be crucial to global warming and monitoring potential hazards to our environment like reducing pollution, reducing the amount of resources wasted, and detecting natural-disasters. One of the aims of IoT is reducing pollution and wasteful usage of resources. Pollution is of concern because of the damage it causes. Air pollution can cause long term health issue which can be life threatening in severe cases. Pollution can also contaminate water sources, and damage crops. This can damage an economy. Pollution in factories and in cities can be greatly reduce if smart devices are used to manage its’ waste. Smart technology focus on improving infrastructure quality, healthcare quality, education quality, and lifestyle quality. Smart cities are the result of the growing demand to improve the quality of life and to enhance efficiency and promote public services. Smart devices can also be used to detect when maintenance needs to be done on buildings and bridges. IoT can revolutionize healthcare quality. This can be done by using sensors to collect information from patients. The information healthcare providers will be able to get access to will help them assess patients’ illnesses. This will result to faster treatment for the patient and it will help save patients money by avoiding patients from paying for the wrong medical treatment or medicine. (Mahesh, 2016) IoT in healthcare provides the ability quick responsiveness in case of an emergency by using smart technology. Smart homes are also another idea the steams from the Internet of Things concept. There are a range of features a smart home can have that can help increase energy efficiency with the light, heating, and cooling system. For example, Smart meters are a growing trend that applies the IoT principles. Smart meters allow home owners to monitor their energy usage. The information is then sent to the supplier in real time. Smart meters provide a huge benefit to the customer and provider by providing an easy way to keep account of the energy usage, it also gives customers the ability to manage their energy bills. Other possible opportunities are in home monitoring systems, and smart home appliances that can meet the needs of each individual. Smart devices can be used in traffic conditions to reduce heavy traffic flow. While other smart devices could help make smart cities become more scalable to the growing population. It’s clear that IoT can provide many opportunities that can greatly improving living standards while maintaining sustainability. Although, it does present major concerns on how this massive network of data will be secured, discovering new security measures will be certainly worth the effort. This is because IoT will revolutionized efficiency and quality among many different aspects of life.

It is true that people, businesses, and nature can benefit greatly from IoT. IoT takes full advantage of sensors and the internet to gather information and exchange it amongst many other devices. This interconnection of smart devices will help in many ways. This could be in the industrial sector where IoT can help optimize automated machinery that makes mass production. The optimization will also influence business spending. For this reason, many businesses already use other IoT technology like smart lights. IoT is also used to build smart cities to improve the standards of living by giving people a more direct and personal experience. The aim for smart cities is to create a more efficient economy, by encouraging people to use public services. This will help ensure that the investment in providing public servers are used. Cities that change their infrastructure to support smart devices will help bring more wealth to the city. This is by a city being able to efficiently manage its resources and waste. It will also attract people into wanting to live there, and encourage businesses set up in the city. Thus, bringing more job opportunities for the people who live in the city or near it. However, a large network of smart technology exchanging mass amounts of information presents a great concern for security. Many articles have been written, arguing that IoT creates more vulnerabilities for data exploitation and new security measures would need to be discovered. This will be an extremely difficult challenge for industries. On the other hand, IoT will help improve all sectors of business. For example, there was a study done to see if IoT could be used to optimize the conditions for students to learn in. The way they conducted this experiment is by comparing data on students’ performance with different lecturers and learning environments they were placed in. The sensors would gather information on the teachers’ voice to determine the frequency they spoke on. The sensors also focused on other variables; such as, the temperature of the room and its’ impact on students’ ability to learn. They discovered that the way the lecturer spoke had a correlation on how well a student learned. This could be due to the brain responding to certain speech frequencies that helps stimulates a student’s ability to focus in class. However, there was no correlation found to determine if the temperature setting impacts a student’s learning. As a result, an institution for learning can focus on training teachers to practice using body language that helps change the frequency they speak on. This experiment shows that IoT can be used in a variety ways to either optimize performance or save money.

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