Humans have always looked for an easier way of life. This idea of making life easy has led to the discovery of many things. Some of the discoveries lead to advancement in technology. Looking back to 1939 the idea of self-driving cars looks abstract and a kind of some thing that will never come to reality. However, the advancement in technology has led to the discovery of neural networks and improvements in the field of Artificial intelligence and Machine learning. Today with neural network we can train a model that will classify lots of things with good accuracy. With Artificial intelligence, Machine learning and neural network we have things like self-driving cars, deepFake, AlphaGo, smart homes etc.

The aim of this task is to implement home security cameras in such a way that the data is encrypted first before being sent to the cloud.

Computer security can be seen in terms of CIA (confidentiality, integrity and availability). Confidentiality in this context means unauthorized people or entities should not have access to information they are not supposed to access Beckers, K. (2015). In smart homes, users don't want any other person to have access to their data except themself, the company managing the data is not exempted. Integrity means only authorized users can modify their data. Availability in this context refers to data being available for the owners to access. In this case study the user can request for his data. When the user requests his data the user wants it to be available (availability), the user wants the data to be accurate (Integrity) and also the user wants the data to be accessible by only him (Confidentiality).

A system is considered usable if dangerous errors are not made by users, and users can do things without having difficulty, users are okay with the interface and at the end of the task users are satisfied with the system (Whitten and Tygar, n.d.).

There is often trade off between usability and security. Sometimes poor usability can lead to poor security (W, 2020).

Prototype is a conceptual view of a system. There are different types of prototype. In order to test our implementation paper prototype was designed.

The notion of security is not just for computers, in real life people want to be protected from burglary and thieves. One way people explore to make their home safe is to put security cameras in their homes. These cameras take pictures of whatever is happening in that house. With the Internet of things, this even makes it easier, since the security cameras are connected with other devices and the data (pictures) captured are being sent to the cloud for storage.

Internet of things offers lots of services to its users. IoT consists of computing devices that are interrelated. These devices have UIDs called unique identifiers and they have the capacity to exchange data with one another without the intervention of humans. Due to the advancement in embedded systems, commodity sensors and Machine learning, internet of things has now become more robust (Rouse, 2020).

 Machine learning and Artificial intelligence makes it easier to process collected data in IoT (Rouse, 2020).

In life people want to control the way they live and do things, IoT helps in doing that. With IoT you can work smarter. With IoT there is a reduction of cost for companies when they automate their processes. organizations can save money and time, make informed decisions, and increase their revenue (Rouse, 2020).

IoT has really helped in making smart cities. In smart cities we have automated homes. We have a lot of IoT applications. IoT is applied in industries, enterprise, and consumer(Rouse, 2020). In this work, IoT is considered in terms of consumer.

IoT in terms of consumer here is regarded as smart homes. Smart homes have things like electronic devices, lighting devices, heating and other smart appliances that can be monitored from a distance either with smartphones or computers (Rouse, 2020).

Many devices are connected to the internet through IoT, this means that with IoT lots of data are being generated from users. These Data need to be protected. Data exchange by different devices through networks and other devices connected in IoT needs to be safeguarded, this technology is known as IoT security (Rouse, 2020). Users personal information also needs to be protected, this referred to as IoT privacy (Rouse, 2020). user privacy and security are the major concern. users want their data to be given much protection from attackers and against any threat. Due to the nature of connection of devices in IoT only one vulnerability is needed by an attacker to change all the data and make it not usable (Margaret, 2020). Lack of device updates by manufacturers can make them vulnerable to attack. Another issue of concern is the fact that personal data of individuals can be sold out by companies running these devices (Rouse, 2020). Hence, in this our work we consider some measures to solve some of the user concerns. The user can encrypt their data from their controlled devices before it reaches the company managing it. Users can also request for their data to be erased from the company database.

Reference:

Rouse, M. (2020). *What is IoT (Internet of Things) and How Does it Work?*. [online] IoT Agenda. Available at: https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT [Accessed 27 Feb. 2020].

Rouse, M. (2020). *What is IoT security (internet of things security)? - Definition from WhatIs.com*. [online] IoT Agenda. Available at: https://internetofthingsagenda.techtarget.com/definition/IoT-security-Internet-of-Things-security [Accessed 28 Feb. 2020].

Margaret, R. (2020). What is Internet of Things privacy (IoT privacy)? - Definition from WhatIs.com. [online] IoT Agenda. Available at: https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-privacy-IoT-privacy [Accessed 28 Feb. 2020].

Beckers, K. (2015). *Pattern and Security Requirements: Engineering-Based Establishment of Security Standards*. Springer. p. 100. ISBN 9783319166643.

Whitten, A. and Tygar, J. (n.d.). *Why Johnny Can't Encrypt: A Usability Evaluation of PGP 5.0*. http://cygnus-x1.cs.duke.edu/courses/cps182s/compsci342s/cps182s/spring06/papers/johnny.pdf.

W, E. (2020). *Security and usability: you CAN have it all!*. [online] Ncsc.gov.uk. Available at: https://www.ncsc.gov.uk/blog-post/security-and-usability--you-can-have-it-all- [Accessed 28 Feb. 2020].