Smart Systems & its Application

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Abstract: *This paper discusses about smart systems and describes framework and applications of Smart systems. It emphasis units use and benefit of it in crime analysis and also mentions limitation and challenges of smart system.*

Key Words: *Smart System, frame work, application of smart system, crime analysis.*

1. INTRODUCTION:

In terms of Information Technology, smart system is described as a collection of various elements which are inter connected components and are further organized for a common purpose of the work where processes are capable enough to take its own decisions. The words intelligent and smart can be interchange if the system is good enough to evolve itself. [1]

Smart system mainly focuses on following issues [2]:

- how machines reacts and
- how interconnected machines communicates to world around

Various definitions of an Intelligent Smart systems are:

"The systems which incorporate the functions of sensing, actuation and control to describe and analyze an event/situation to make the decisions based on the data in adaptive or predictive manner which helps to perform the smart actions are called smart systems". [3]

The figure showcases various use of Intelligent system based equipment's in our day to day routine life. The figure indicates that various devices like AC, fan, door lock etc. can be operated through android based devices. Intelligent system can be successfully designed, developed and deployed using **Artificial Intelligence (AI). [4] Framework is shown in Figure 2**

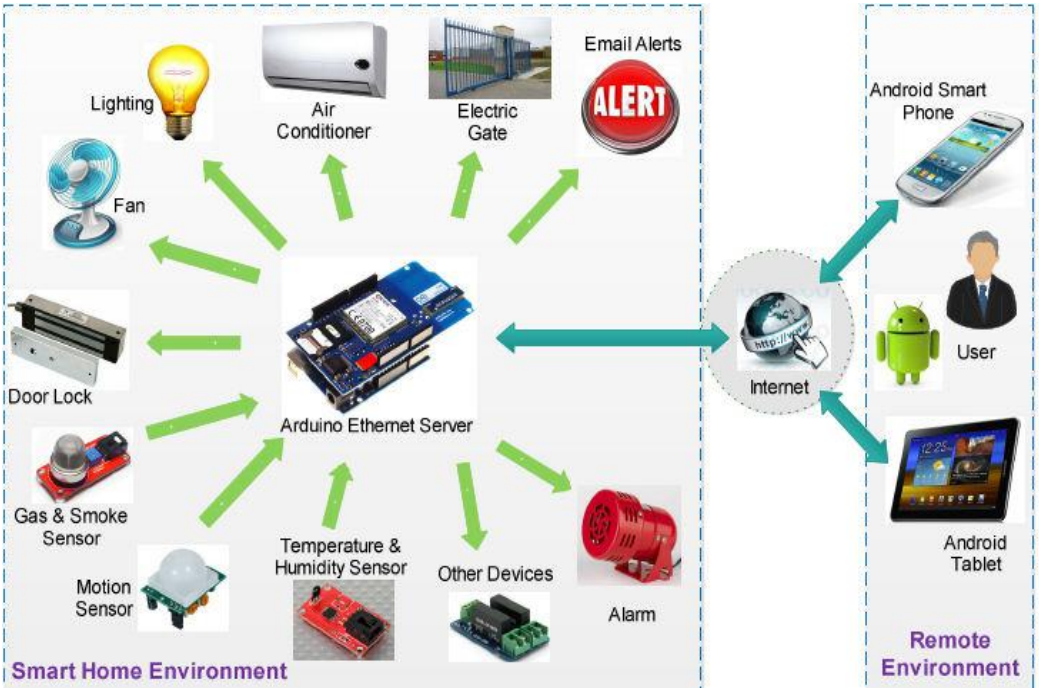

Figure 1 Various usages of Intelligent Systems

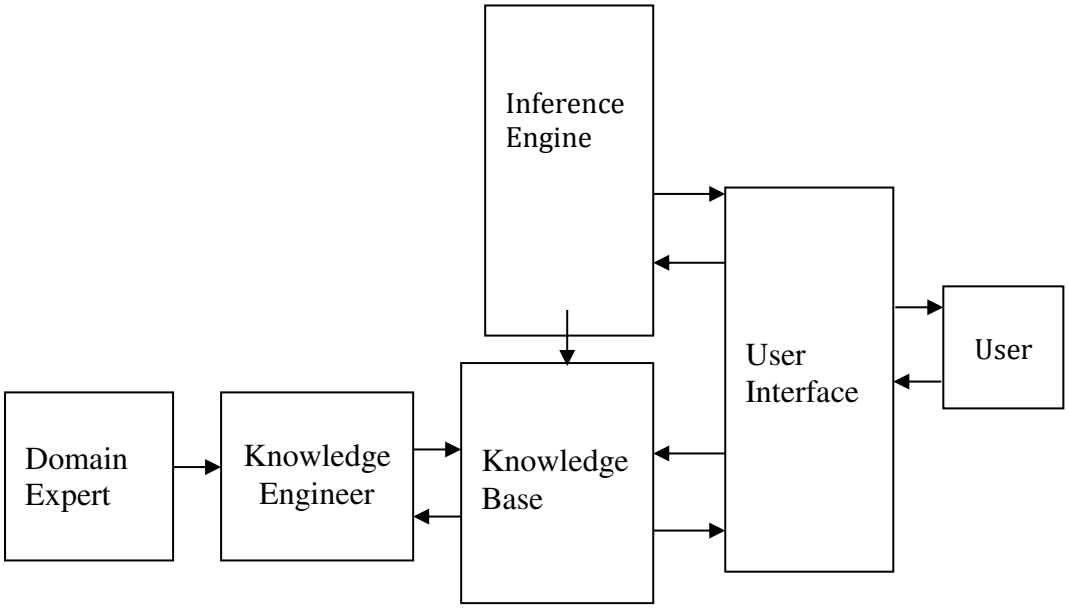

Figure 2. Framework of Intelligent System

2. APPLICATIONS OF INTELLIGENT SYSTEMS:

Various smart systems will address various challenges like limited resources, change in the climate, age of population, globalization etc. Intelligent systems will combine all these knowledge from various subjects by including Data Structures, Programming, Algorithms, Pattern matching, Machine Learning, AI, Numerical methods, psychology etc [5].

Environment

In terms of challenges in environment, smart solutions gives us energy management and its distribution, it also provides smart control of various electrical devices, it also provides smart logistics which in turn gives energy efficient transportation management by 2020, to reduce global emissions by 23%, with an equivalent of 9.2 Gt CO2e.

Automotive sector

In the automotive sector, through integration of smart systems it will be a key enabler for pre-crash systems and predictive driver assistance features to reach the goal of the Road Safety Action Plan to halve the number of traffic deaths by 2020. Furthermore, smart systems are considered fundamental for sustainable and energy-efficient mobility, e.g., hybrid and electric traction.

Internet of Things

Smart systems are useful to contribute in the development of the future IoT, in which these smart systems provides various smart functionality to everyday objects like industrial goods in the supply chain, or to various food products in supply chain. With the help of RFID technology, real-time sensors, wireless sensors, and response capability, energy efficiency, as well as networking functionality, objects will become smart objects now-a-days. These smart objects can support the elderly and disabled people. The close monitoring and tracking of various food products can improve the food supply in form of quantity and quality. Smart industrial goods can store information about their origin as well as destination, various components of food and its usage. Waste disposal can also become a efficient recycle process. Armatix developed a pistol that uses an RFID-active wristwatch to function.

Healthcare

In the sector of healthcare, various smart system technology leads various better diagnostic tools for better treatment through smart systems technology which in turn leads to better diagnostic tools, to better treatment and quality of life for patients by simultaneously reducing costs of public healthcare systems. Major developments in this sector are smart miniaturized devices and artificial organs like artificial pancreas or cochlear implants.

For example, Lab-on-a-chip devices can have sensors which are biochemically developed that detects specific molecular markers in body fluids or tissue. They can also include various types of functionalities such as taking samples, preparation of samples, pre-treatment of samples, processing of data and its storage, implantable systems which can be reabsorbed by the body after use, non-invasive sensors based on transferral principles, or devices for responsive administration of medication. In healthcare, smart systems often operate autonomously and within

networks, because those systems are able to provide real-time monitoring, diagnosis, interaction with other devices, and communication with the patient or physician.

Intelligent system and crime analysis

Now-a-days many operations which will used for effective enforcement of law like investigation of crime and detection of it are intensive to information. For police department, the need for the advanced information system becomes more critical in today's world.

AI will make it much harder for criminals to get away with physical crime, which may encourage criminals to turn to cyber-attacks where they can better avoid identification. As well as changing the nature of crime, machine learning will also affect how financial teams function within organizations. AI is always accompanied by the fear of unemployment, however a machine's predictions are only useful if there are humans to respond to them.

As facial recognition software becomes more commonplace, there's also potential for disruption in security. Smart phones already use fingerprint identification, so why not faces too? Imagine using facial recognition to make purchases in store, for example – think contactless payments, without the card.

Another use might be unlocking your house or car simply by looking at some kind of key screen. It's these types of cameras and screens that will be able to recognise when an unauthorised person is trying to break in, as well as domestic AI assistants with security settings. This isn't to say that physical crime will be completely eradicated, but it will become much harder.

3. INTELLIGENT SYSTEM-CHALLENGES, LIMITATIONS AND FUTURE:

Smart system technology faces a major challenge is the integration of diverse components, developed and produced through different technologies and materials. The main focus is on the design and manufacturing of completely new marketable products and services for specialized applications (e.g., in medical technologies), and for mass market applications (e.g., in the automotive industries).

In the context of industrial process, and while emphasizing the combination of various components with the aim of merging their technical and functional abilities in to the system which is interoperable. The term "smart systems integration" is used for this purpose. This term reflects the requirement of industry and gives challenge to the integration of different technologies, component size and the materials in to a single system.

4. SUMMARY:

The chapter introduces smart system , its architecture and steps to create and its applications. For any safe and secure country internal security of the country is very important and as time is changing and becoming digital more day by day it's very important to analysis cyber crimes along with other crimes to maintain harmony and peace in society. Using techniques like data mining, neural networks law Enforcement agencies a be assisted in preventing, identifying and investigation crimes.

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