A STUDY ON MOBILE APPLICATIONS WITH IOT BASED ON SMART CITIES

J.Saranya
Assistant Professor, Dept.of Computer Applications, Chevalier.T.Thomas Elizabeth College for Women, Sembium,Ch-11,

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ABSTRACT *The extensive growth of IOT by mobile app wearable from a part of the Internet of things. Using wifi or Bluetooth, the wearable like health band, apple watch, glasses can be connected to the smart phones and any sort of data can be transferred between the devices. There are numerous IoT applications in Using IoT environment sensors for developing a smart cities. these smart cities is based an urban system and makes infrastructure more interactive ,accessible and efficient. Need for Smart Cities arose due to-*

- *Rapidly growing urban population*
- *Fast depleting natural resources*
- *Changes in environment and climate*

General Terms: *Internet of things, Mobile apps, wireless connection.*

Keywords: *Mobile apps, IoT, Smart cities(SC),WSN*

1.INTRODUCTION

A mobile applications most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smart phone or tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs. Apps are generally small, individual software units with limited function. This mobile apps are functioned with the help of Internet connections. The basic function of mobile apps with Internet of things(IoT) is connecting and sharing or transferring data from one to another. IoT based on smart cities is used to build a newer and modern world.

2.IoT BASED SMART CITIES FOCUSED APPLICTION AREAS

2.1 PUBILC TRANPORTATION

Public transportation is disrupted whenever there are road closures, bad weather, or equipment breakdowns. IoT can give transit authorities the real-time insights they need to implement contingency plans, ensuring that residents always have access to safe, reliable, and efficient public transportation. This might be done using insights from cameras or connected devices at bus shelters or other public places.

2.2 INNOVATIVE SOLUTION FOR SMART TRAFFIC CONGESTION

As more and more people move to cities, traffic congestion – which is already a massive problem – is only going to get worse. Fortunately, the Internet of Things is well positioned to make improvements in this area that can benefit residents immediately. For example, smart traffic signals can adjust their timing to accommodate commutes and holiday traffic and keep cars moving. City officials can collect and aggregate data from traffic cameras, mobile phones, vehicles, and road sensors to monitor traffic incidents in real-time. Drivers can be alerted of accidents and directed to routes that are less congested. The possibilities are endless and the impact will be substantial.

2.3 IMPROVED PUBLIC SAFETY

Smart cities and their CSP partners often implement video monitoring systems to tackle the safety concerns that come up in every growing city. Some cities now have hundreds of cameras monitoring traffic for accidents and public streets for safety concerns. Video analytics software process the thousands of hours of video footage each camera produces, whittling it down to only important events. Systems using IoT technology turn every camera attached to the system into a sensor, with edge computing and analytics starting right from the source. Artificial intelligence technology like machine learning will then complete the analysis and send video footage to humans who can react quickly to solve problems and keep residents safe Cities are also improving public safety with smart lighting initiatives that replace traditional streetlights with connected LED infrastructure. Not only do the LED lights last longer and conserve energy, they also provide information on outages in real time City workers can use that information to ensure important areas are well lit to deter crimes and make the public feel safer
cameras or connected devices at bus shelters or other public areas.

2.4 SMART CITIES: JUST IN TIME WASTE COLLECTION

Most cities use some type of waste container to collect the waste produced by households. Traditionally, these garbage trucks operated on fixed routes, e.g. visiting each container once a week. As a consequence, Some containers are emptied when they are only half full and some are emptied days after they became full. The 'smart solution' is to equip the waste containers with sensors that detect the volume of the waste in the container. This data is used to optimize the number of garbage trucks and their routes, skipping containers that are not yet full and making an early stop at containers that are close to reaching their limit. This results in a cheaper process(fewer stops required) and elimination of full waste containers(which could lead to people dumping their waste on the street next to the container)

2.5 SMART CITIES: LEAKAGE DETECTION

Water loss management is becoming increasingly important due to population growth and water scarcity. Experience shows that the amount of non-revenue water (water produced but lost due to theft, metering inaccuracies, and supply chain leakage) can be up to 25%. To minimize this loss, water providers can equip the distribution network with sensors to provide real time insight on pressure, flows, and quality. By analyzing this data, especially the flows during night when normal consumption is minimal, leakages can be detected.

2.6 SMART CITIES: POLLUTION DETECTION

Sensors can be used to measure the quality of surface water in real time mode. Traditionally, water quality monitoring required manual actions for sampling and analyzing, causing a lag between the emergence of pollution and the detection of it. Real time water quality monitoring, with a network of sensors covering surface water, contribute to sustainability or city resources.

2.7 SMART CITIES: RESPONSIVE DEVICES

Responsive, or "smart" devices and appliances (e.g. air conditioners, hot water heater, refrigerator, and clothes washers and dryers) can temporarily reduce energy consumption during peak energy demand periods. This "demand response" may be triggered by a signal from the utility during a peak demand event, or by intraday price increases in areas where local utilities provide dynamic, "time of use" pricing. Customers control home energy usage automatically through devices like the nest learning thermostat, which studies the habits and patterns of consumers to find the most optimal use of energy.

2.8 SMART CITIES: SELF-HEALING GRID

Electric utilities are adding :Internet of things" technologies such as sensors and automated controls, and linking them to advanced communications and analytic software. The software monitors distribution system data in real time and is able to detect and isolate faults and reconfigure the system to minimize impact on customers, with limited human intervention. The grid can "heal" itself through a combination of automated switching, dispatch of distributed energy resources, coordinated demand response and management without intervention by operates in the control room.

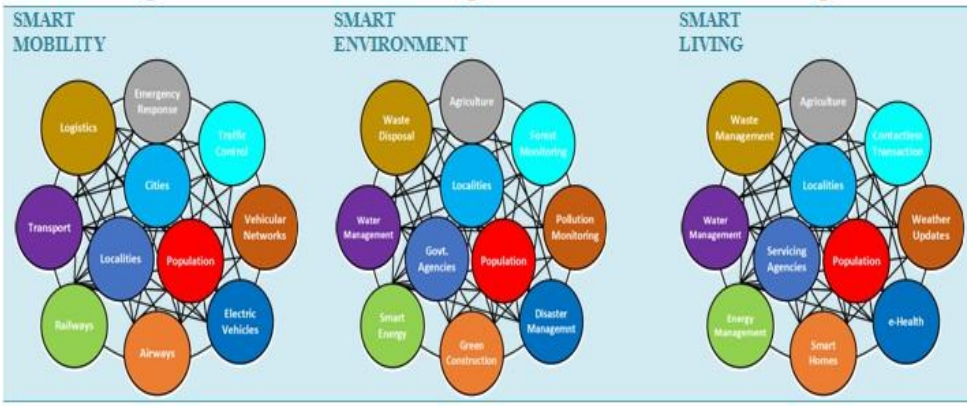
2.9 SMART CITIES: SMART METERING

Smart meters record electricity consumption in intervals of one hour or less and communicate this data to the utility company. This allows utilities to introduce dynamic pricing based on the season and the time of day and encourages citizens of smart cities to reduce their energy consumption, especially when demand is at peak level. Smart meters also provide data that helps utilities better monitor the health of the electric grid, restore service faster during outages, communicate information to customers such as high usage alerts, and integrate distributed energy resources.

2.10 SMART CITIES: ZERO WASTE

Through better design and life cycle thinking, consumption and production become closed loops, producing no outputs as waste throughout their life cycle. As such, the concept of waste disappears, as all by-products retain an intrinsic value to feed into other systems. Even food spoilage and waste could be reduced to zero and turned into bio fuels, compost or animal feed.

Figure 1: SMART CITIES FOCUSED APPLICATION AREAS



3.WIRELESS MULTI-SENSOR NETWORK FOR SMART CITIES

Urbanization proceeds at an astonishing rate ,cities have to continuously improve their solutions that affect the safety, health, and overall well-being of their residents, Smart city projects are worldwide build on advanced sensor, information and communication technologies to help dealing with issues like air pollution, waste management , traffic optimization , and energy efficiency. which applies various sensor installed o the public lighting system and a cloud based analytical module. while the installed wireless multi-sensor network gathers information about a number of stressors, The module integrates statistically process the data. The module can handle inconsistent, missing, and noisy data and can extrapolate the measurements in time and space , it can create short-term forecasts and smoothed maps, both accompanied by reliability estimates. The resulting database uses geometric representations and can serve as an information centre for public services

3.1 SMART CITIES: EMBEDDED ENVIRONMENTAL SENSORS

The embedded sensors of various types are used for everything from pollution monitoring to land management ,supplementing or replacing on-site inspections. Energy agencies rely on these sensors for continuous environmental monitoring and automation intervention .These technologies help agencies exe cute their missions ,but also raise issues concerning the definition and resolution of violations in a real-time monitoring environment .Embedded sensors in “smart cities” enable continuous monitoring of weather conditions, air quality and home energy consumption.

TABLE 1 ANALOGY – HUMAN & SMART CITIES

HUMANS	SMART CITIES
Skeleton	Buildings,Industries,People
Skin	Tranportation,Logistics
Organs	Hospital,Police,Bank,School
Brain	Ubiquitously embedded intelligence
Nerves	Digital telecommunication network
Sensory Organs	Sensors,Tags
Cognition	Software

4.ENERGY EFFICIENT BUILDINGS

IoT technology is making it easier for buildings with legacy infrastructure to save energy and improve their sustainability.Smart builing energy management systems, use IoT devices to connect disparate, nonstandard heating, cooling, lighting, and fire-safety systems to a central management application. The energy management application then highlights areas of high use and energy drifts so staff can correct them.Research shows that commercial buildings waste up to 30 percent of the energy they use,[1] so savings with a smart building energy management system can be significant. As more smart city buildings use energy management systems, the city will become more sustainable as a whole.

Figure 2 : SMART CITY

5.CONCLUSION

The Public need more knowledge and awareness of mobile apps and IoT. Based on IoT they can create modern cities with good

Environmental monitoring world. Nowadays people are facing lot of issues and challenges. To recover all those things IoT smart cities are the only solution. The basic knowledge is structured with various smart cities details which speak about knowledge acquisition .This basic study will helps us to grow into the modern IoT buildings & future smart cities.

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