



DEPARTMENT OF
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CONTENTS

FUTURE ENHANCE IOT

EDGE COMPUTING

AI POWERED DRONE

VR Vs AR

COLOUR DETECTION

(PYTHON)

MACHINE LEARNING



NARAYANA
ENGINEERING COLLEGE
NELLORE (AUTONOMOUS)



(PROGRAM SPECIFIC OUTCOMES) PSO_s

Domain Specific Knowledge: Apply the relevant techniques to develop solutions in the domains of algorithms, system software, computer programming, multimedia, web, data and networking.

Software Product Development: Apply the design and deployment principles to deliver a quality software product for the success of business of varying complexity.

(PROGRAM OUTCOMES) PO_s

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

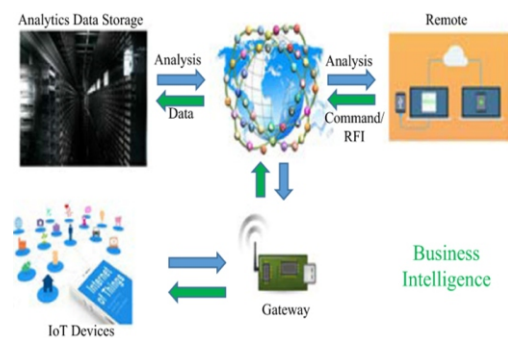
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

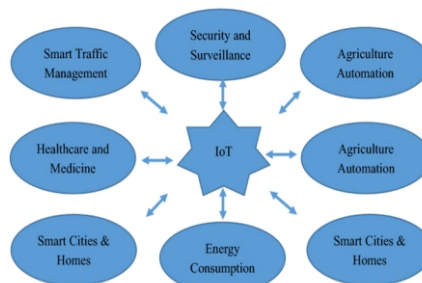
A REVOLUTIONARY APPROACH FOR FUTURE TECHNOLOGY ENHANCEMENT-IOT

Internet of Things (IoT) is a new paradigm that has changed the traditional way of living into a high tech life style. Smart city, smart homes, pollution control, energy saving, smart transportation, smart industries are such transformations due to IoT. A lot of crucial research studies and investigations have been done in order to enhance the technology through IoT. However, there are still a lot of challenges and issues that need to be addressed to achieve the full potential of IoT. These challenges and issues must be considered from various aspects of IoT such as applications, challenges, enabling technologies, social and environmental impacts etc.

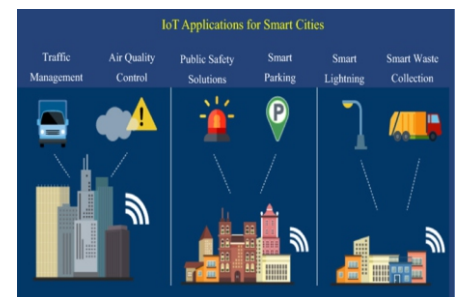
The Internet of Things (IoT) is an emerging paradigm that enables the communication between electronic devices and sensors through the internet in order to facilitate our lives. IoT use smart devices and internet to provide innovative solutions to various challenges and issues related to various businesses, governmental and public/private industries across the world. IoT is progressively becoming an important aspect of our life that can be sensed everywhere around us. In whole, IoT is an innovation that puts together extensive variety of smart systems, frameworks and intelligent devices and sensors. Moreover, it takes advantage of quantum and nanotechnology in terms of storage, sensing and processing speed which was not conceivable beforehand.



General architecture of IoT



Some of the potential application domains of IoT



Potential IoT application areas for smart cities

A great transformation can be observed in our daily routine life along with the increasing involvement of IoT devices and technology. One such development of IoT is the concept of Smart Home Systems (SHS) and appliances that consist of internet based devices, automation system for homes and reliable energy management system. Besides, another important achievement of IoT is Smart Health Sensing system (SHSS). SHSS incorporates small intelligent equipment and devices to support the health of the human being. These devices can be used both indoors and outdoors to check and monitor the different health issues and fitness level or the amount of calories burned in the fitness center etc. Also, it is being used to monitor the critical health conditions in the hospitals and trauma centers as well. Hence, it has changed the entire scenario of the medical domain by facilitating it with high technology and smart devices. Intelligent sensors, drone devices are now controlling the traffic at different signalized intersections across major cities. In addition, vehicles are being launched in markets with pre-installed sensing devices that are able to sense the upcoming heavy traffic congestions on the map and may suggest you another route with low traffic congestion.

Therefore IoT has a lot to serve in various aspects of life and technology. IoT has also shown its importance and potential in the economic and industrial growth of a developing region. Also, in trade and stock exchange market, it is being considered as a revolutionary step. However, security of data and information is an important concern and highly desirable, which is a major challenging issue to deal with. Internet being a largest source of security threats and cyber-attacks has opened the various doors for hackers and thus made the data and information insecure. However, IoT is committed to provide the best possible solutions to deal with security issues of data and information. Hence, the most important concern of IoT in trade and economy is security. Therefore, the development of a secure path for collaboration between social networks and privacy concerns is a hot topic in IoT and IoT developers are working hard for this.

IoT has a multidisciplinary vision to provide its benefit to several domains such as environmental, industrial, public/private, medical, transportation etc. Different researchers have explained the IoT differently with respect to specific interests and aspects. The potential and power of IoT can be seen in several application domains. The few of the application domains of IoTs potentials.

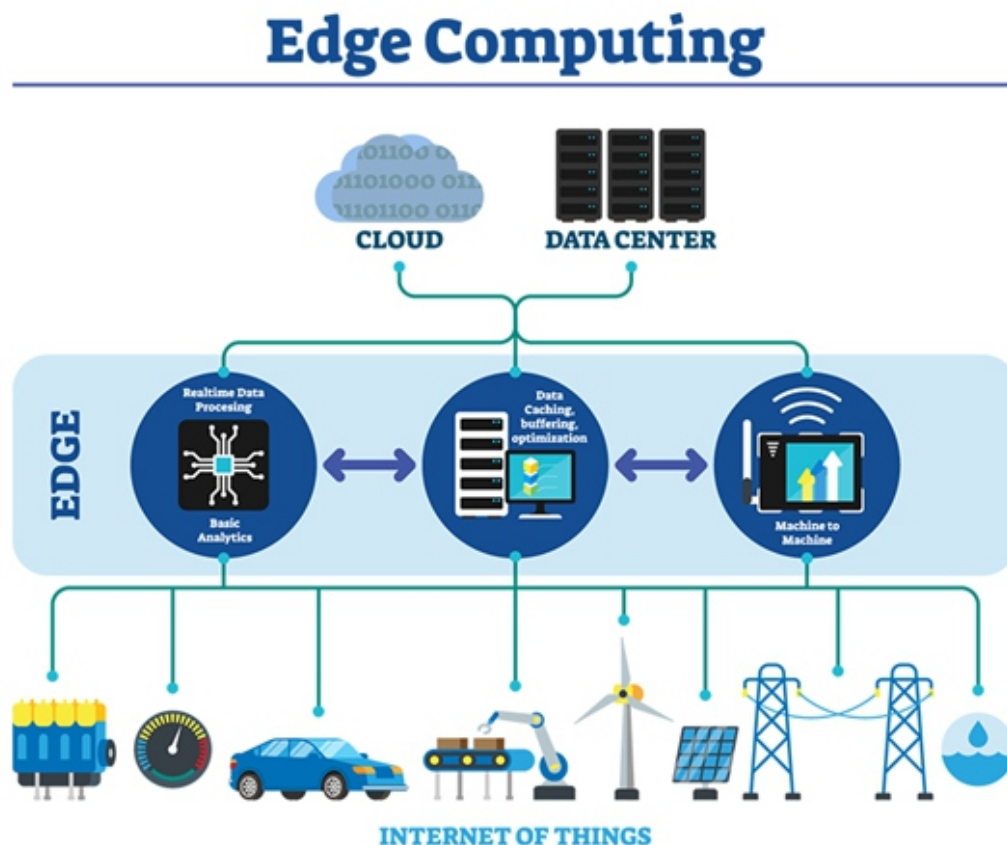
The movement of people from rural to urban atmosphere resulting in growing population of the cities. Therefore, there is a need to provide smart solutions for mobility, energy, healthcare and infrastructure. Smart city is one of the important application areas for IoT developers. It explores several issues such as traffic management, air quality management, public safety solutions, smart parking, smart lightning and smart waste collection.

Recent advancements in IoT have drawn attention of researchers and developers worldwide. IoT developers and researchers are working together to extend the technology on large scale and to benefit the society to the highest possible level. However, improvements are possible only if we consider the various issues and shortcomings in the present technical approaches.

T. LAKSHMI PRASANNA
ASSISTANT PROFESSOR

EDGE COMPUTING

Edge computing is a distributed computing paradigm that brings data storage and computation closer to data sources. Edge computing is a topology- and location-sensitive form of distributed computing; the term refers to architecture rather than a specific technology. It was created in the late 1990s to serve video and web content, its origin lies in content delivery networks. In the early 2000s, these networks evolved to host applications and application components at the edge servers,[5] resulting in the first commercial edge computing services that hosted applications such as dealer locators, shopping carts, real time data aggregators, and ad insertion engines.



AI POWERED DRONE TO IDENTIFY THE INSECTS IN THE CROP

Precision farming in particular precision pest management is a favourite buzzword in today's agricultural discussions and promoted as an integral part of integrated pest management (IPM) which promises economic benefits for the farmers and environmental benefits for society. The precision insect pest management provides an enabling set of technologies such as field maps of insect distribution, detection methods for insect pests, methodology to apply insecticides only on selected area and precision release of natural enemies in the field. The drone mediated technologies which are reliable and cost effective being advocated in the precision pest management in many parts of the world and play a pivotal role in precision agriculture. The commercial use of drone in agricultural fields or forests has been limited to a few countries which need to be positively promoted in Indian agricultural research and technology development, and encouraged widely in pest management practices.

Introduction: An AI based drone can be deployed in the field and capture images if it detects any insects or diseases in the crops. The images are then sent to the servers where an image classification model based on machine learning is used to identify the insects and disease. Classification based machine learning algorithm that can read an image and assign weightage to various objects in it so it can differentiate one from the other.

Objective 1: Our plan is to develop a drone-based crop health forecasting solution that can be used to detect insects and diseases in crops and recommend more accurate solutions to address them.

Objective 2: to decrease use of water, fertilizer, and pesticides, this in turn keeps food prices down. Reduced impact on natural ecosystems. Less runoff of chemicals into rivers and ground water.

Concept and Objectives

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Newness/Uniqueness of the Innovation

The service sector is declared to be the most substantial contributor to India's GDP. Our country reigns the world as the most prominent producer of pulses, milk, rice, wheat, sugarcane, spices, etc. These also add generous value to the economy with their activities in the agrarian sector. The Indian agricultural sector contributes a tremendous 18% to India's GDP.



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COLOUR DETECTION

In this study, real time industrial application of single board computer based color detection system is realized. In this system, BeagleBoard-xM as a single board computer, a USB camera, a conveyor belt and an LCD7 touch screen are used. OpenCV is used as an image processing library in this color detection system. The main goal of this study is to define the number of different colored packages passing on the conveyor belt according to their color. Then, real time results of the number of the packages and the total package number are displayed on the LCD7 touch screen. At the same time, the USB camera image of the related package on the conveyor belt is monitorized on the same touch screen. If no image of any packages is taken by the USB camera during 60 seconds, the system is turned off.



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VIRTUAL REALITY(VR) AND AUGUMENTED REALITY(AR)

With rapid advances in high-speed communication and computation, augmented reality (AR) and virtual reality (VR) are emerging as next-generation display platforms for deeper human-digital interactions. Nonetheless, to simultaneously match the exceptional performance of human vision and keep the near-eye display module compact and lightweight imposes unprecedented challenges on optical engineering. Fortunately, recent progress in Holographic optical elements (HOEs) and lithography-enabled devices provide innovative ways to tackle these obstacles in AR and VR that are otherwise difficult with traditional optics. In this review, we begin with introducing the basic structures of AR and VR headsets, and then describing the operation principles of various HOEs and lithography-enabled devices. Their properties are analyzed in detail, including strong selectivity on wavelength and incident angle, and multiplexing ability of volume HOEs, polarization dependency and active switching of liquid crystal HOEs, device fabrication, and properties of micro-LEDs (light-emitting diodes), and large design freedoms of metasurfaces. Afterwards, we discuss how these devices help enhance the AR and VR performance, with detailed description and analysis of some state-of-the-art architectures. Finally, we cast a perspective on potential developments and research directions of these photonic devices for future AR and VR displays.



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FACE RECOGNIZATION

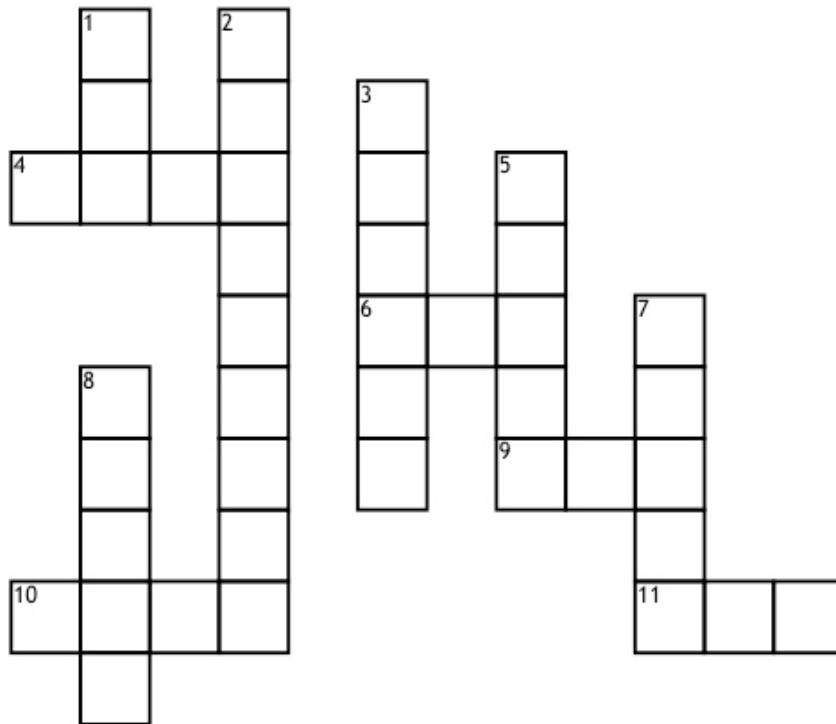
Recently face recognition is attracting much attention in the society of network multimedia information access. Areas such as network security, content indexing and retrieval, and video compression benefits from face recognition technology because "people" are the center of attention in a lot of video. Network access control via face recognition not only makes hackers virtually impossible to steal one's "password", but also increases the user-friendliness in human-computer interaction.

Indexing and/or retrieving video data based on the appearances of particular persons will be useful for users such as news reporters, political scientists, and moviegoers. For the applications of video phone and teleconferencing, the assistance of face recognition also provides a more efficient coding scheme. In this paper, we give an introductory course of this new information processing technology. The paper shows the readers the generic framework for the face recognition system, and the variants that are frequently encountered by the face recognizer. Several famous face recognition algorithms, such as eigenfaces and neural networks, will also be explained.



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CODING CROSSWORD PUZZLE

**Across**

4. A super fan of a popular celebrity, store, app, item, etc.
 6. Gossip
 9. Suspicious, commonly used in Among Us, "Cyan is _____"
 10. When someone opens your message, but does not reply, "He left me on _____"
 11. A word used to tell someone they are lying

Down

1. A response to a challenge
 2. The decision of the public to to dismiss somebody or an idea, "That person should be _____"
 3. An app used to make, create and react to videos
 5. A word used to describe something amazing
 7. Tragically mainstream
 8. Woman who "wants to see the manager"

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