eVISION' 16

(Sponsored by: TEQIP-II)

A Technical Symposium for Students

Theme: Role of Electronics in making Smart City project a success

Conveners

Dr. S. S. Gill

Dr. Munish Rattan

Editors

Prof. Gurjot Kaur

Prof. Kuldeepak Singh

Prof. Nishu Kansal

Prof. Palwinder Kaur

Organized by

IETE Student's Forum

&

Department of Electronics and Communication Engineering

Guru Nanak Dev Engineering College Ludhiana

eVision'16 Organizing Committee

4th November 2016

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Message

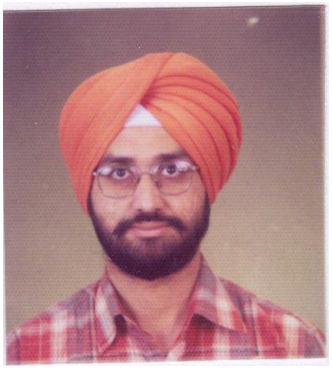
It gives me immense pleasure to learn that the Department of Electronics and Communication Engineering is organizing ***e***Vision'16, a technical symposium, which will invite the students to explore the multidimensional facets of the latest advances in the field of electronics and communication. I wish that this event will give a thrust to the creativity and innovation of the students so that they can mark their presence in the engineering field. Wishing a great success for this event.

With Best Wishes

Dr. M. S. Saini

Director, GNDEC

Message



We are delighted that eVision'16 is being organized by the Department of Electronics and Communication Engineering. This technical symposium will bring the young engineers on one common platform where they can share their interests in the field of engineering and can learn a lot from each other. This event will bring out the hidden talent of the students and will enrich their knowledge.

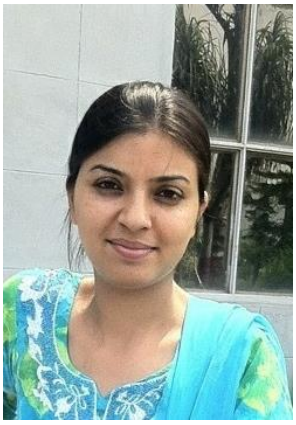
We extend our best wishes to all the participants and warm welcome to all. We are also grateful to all the members of the organizing team who have put in their best to make eVision'16 a grand success.

Dr. S. S. Gill

Dr. Munish Rattan

Conveners, eVision'16

Message



We are delighted to present eVision'16, a technical symposium organized by the Department of Electronics and Communication Engineering in collaboration with the IETE's Students Forum and TEQIP-II. This event is targeted to bring together eminent academicians to review the latest advances in the field of engineering which will eventually help in making SMART CITY project, a success.

The organizing team feels a great pleasure to welcome you all to eVision'16. We feel very proud on receiving an overwhelming response from the students for participation.

We acknowledge the continuous support received from the organizing committee for making this event a great success.

Prof. Jasmeet Kaur
Prof. Simranjit Kaur

Organizing Secretaries, eVision'16

Message

It gives us immense pleasure to welcome you to eVision'16, a technical symposium organized by the Department of Electronics and Communication Engineering where the organizing committee has put an effort to bring out the enthusiasm in the young engineers and we feel proud to see such a tremendous response.

We proudly present the proceedings of this event which consists of Session-I with the abstracts of the papers to be presented by the students of B.Tech and M.Tech and Session-II which consist of the projects description to be displayed. The idea of this symposium is to bring an urge of learning new things in the students.

We hope this proceedings fulfils its objective of giving the updated knowledge in the engineering field. We thank all the faculty members and staff of Department of Electronics and Communication Engineering for their unconditional help and co-operation throughout. We wish the participants a great success.

Prof. Gurjot Kaur
Prof. Kuldeepak Singh
Prof. Nishu Kansal
Prof. Palwinder Kaur

Editors, eVision'16

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Smart City Applications: IOT

Jaskaran Singh Phull & Prof. Narwant Singh Grewal

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Abstract: The Internet of Things (IoT) shall be able to incorporate transparently and seamlessly a large number of different and heterogeneous end systems, while providing open access to selected subsets of data for the development of various digital services. Building a general architecture for the IoT is hence a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system. In this paper, we focus specifically to an urban IoT system that, while still being quite a broad category, are characterized by their specific application domain. Urban IoTs, in fact, are designed to support the Smart City vision, which aims at exploiting the most advanced communication technologies to support added-value services for the administration of the city and for the citizens. This paper hence provides a comprehensive survey of the enabling technologies, protocols, and architecture for an urban IoT. Furthermore, the paper will present and discuss the technical solutions and best-practice guidelines adopted in the Ludhiana Smart City project.

Index Terms—Efficient XML Interchange (EXI), network architecture, sensor system integration, service functions and management, Smart Cities, testbed and trials, 6lowPAN.

3D printing: This century's ost disruptive innovation

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Abstract: This paper reviews about this century’s most disruptive innovation i.e. 3D printing and points out its possible impact on our society which may soon change our way of manufacturing but also of working, playing and living. 3D printing, also known as rapid prototyping is the process of creating a 3D object by laying down successive material layers until the object is formed. This paper focuses on principle of 3D printing, its origin, processes and technologies used, type of changes brought by 3D printers in our everyday

life. It also focuses on list of major achievements across the history of 3D printing along with its merits, demerits and wide range of applications including jewellery, footwear, industrial design, architecture, engineering & construction, automotive, dental and medical industries along with its future scope.

Dielectric Resonator Antennas for WLAN Applications

Saroop Singh & Prof. Chahat Jain

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Abstract: Wireless communication has grown at a very rapid pace across the world over the last two decades. This provides greater flexibility in communication infrastructure. Wireless communication has become an essential part of life of human beings. With development of communication equipment like mobiles, laptops antennas of low profile and compact size are needed. DRAs are good replacement for conventional antennas because of much wider operation bandwidth and other attractive features. Smart cities need to be equipped with highly effective communication systems and DRAs have huge potential to minimize spatial problems and thus providing a highly efficient communication system. This has prompted enhancement of parameters and size reduction of Dielectric Resonator Antenna (DRA) of various wireless applications**.**

GNU RADIO: Enabling Technology for Smart Cities

Ashish Thakur, Gaganpreet Kaur & Munish Rattan

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Abstract: Smart city, a revolutionary urban development vision to make cities smarter in the sense of managing a city's assets, is one of the most researched topics. It is an urban development vision to integrate multiple information and communication technology (ICT) and Internet of Things (IoT) solutions in a secure fashion. The smart cities are developed with the goal to improve the quality of life by using urban

informatics and technology to improve the efficiency of services and meet residents' needs. But such implementation requires new technologies that can deal with already overcrowded spectrum, which is major requirement of a smart city. With the emergence of consumer-ready, programmable radio systems and low-cost devices with sufficient computational power, the field of Software-defined-radio (SDR) is experiencing rapid growth. This paper is aimed to describe various fields in which GNU Radio can be beneficial for development of Smart Cities as compare to other existing technologies.

Role of Electronics in Smart City

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*D3 CE, Department of Civil Engineering, **D3 CSE, Department of Computer Science and Engineering

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Abstract- With the increasing exponential growth, our considerations towa1rds the environment are negligible. To overcome the challenge faced, the concept of SMART CITY has been introduced as a step for enhancing the environment conditions. Thus a new concept of E-TRAFFIC SYSTEM under SMART CITY PROJECT has been discussed which not only controls traffic but is also efficient for pollution control. This is a precise approach towards pollution control, ultimately contributing in development of SMART CITY using Electronic devices.

FinFETs in Smart Phones

Srishti & Shweta Vij

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Abstract—FinFETs are used widely these days. Its main application is the smart phones or Iphones. In smart phones, FinFETs are used because it boosts up its speed. To understand 3-D FinFET in the mobile communication, this paper reviews the enhancement techniques used for production of phones. This production is done by Intel for both high performance logic and SOC devices and the changes they made for

their 2nd generation 14nm FinFET. It is worth mentioning that 14 nm size is equivalent to the virus. This is because transistor is scaled down to improve the efficiency of smart phones and Iphones. Thus, these phones give better performance as compared to other phones. Samsung's new 10 nm FinFET process adopts an advanced 3D transistor structure with additional enhancement in both process technology and design. In this paper, we are going to discuss about FinFETs that how it is useful in smart phones which contribute in making the city as the smart city.

ROLE OF ELECTRONICS IN MAKING SMART CITY PROJECT A SUCCESS

Gursimran Singh Mann

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Abstract—The main goal of smart city is to improve the quality of life by improving efficiency of services and meeting residents' needs; utilizing the resources and technology in smart and sustainable manner with the help of electric and electronic studies & technologies. Thus, various electronic components and devices such as sensors and smart appliances are the basic needs for transforming the city into smart city.

Role of Electronics in making our city a smart city

BISMANJEET SINGH
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A **smart city** is an urban development vision to integrate multiple information and communication technology (ICT) and Internet of Things (IoT) solutions in a information security|secure fashion to manage a city's assets – the city's assets include, but are not limited to, local departments' information systems,

schools, libraries, transportation systems, hospitals, power plants, water supply networks, waste management, law enforcement, and other community services. The goal of building a smart city is to improve quality of life by using urban informatics and technology to improve the efficiency of services and meet residents' needs.

MALARIA DIAGNOSIS DIAGNOSIS DIGITAL IMAGE ANALYSIS

Damandeep Kaur

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Abstract*:* Every year, malaria kills between 660,000 and 1.2 million people. The World Health Organization (WHO) encourages the development of rapid and economical diagnostic tests that allow for the identification of proper treatment methods. In this paper various digital image techniques are studied to detect malaria parasites. This review paper will analyse data by utilizing standard operations of image processing such as histogram equalization, thresholding, morphological operations and connected components analysis for parasite density estimation. The application of the proposed methods yields high accuracy rate, having low processing time of two seconds per image on a custom computing platform.

PARAMETERS OF OPTICAL CDMA

Prabhjot Kaur & Dr. Baljit Kaur

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Abstract: In this review paper the application of CDMA in optical communication networks is investigated. Optical fiber based communication systems has advantage of having access to large bandwidth and ultra–high speed signal processing are possible. Optical code division multiple access (O-CDMA) is evolving into a promising candidate for access networks, due to its potential for enhanced information security, simplified

and Decentralized network control and its management as well as efficient utilization of bandwidth. This paper give insight of O-CDMA communication technique in a systematic manner followed by recent advances in the domain of Optical CDMA based communication systems.

SMART HOSPITAL- AN INTEGRAL PART OF SMART CITY

SHEENAM RATTAN & GURLEEN KAUR

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Abstract: The pace of technological advancement has been exponential in a countless number of fields. But hospitals continue to be late adopters both of healthcare technology and modern industrial engineering concepts. The fundamental challenge is that most advanced healthcare technologies reside in very disparate systems. The blind application of these technologies results in a significant amount of manual coordination that actually reduces workflow efficiency. Organizations need to adopt both technology and process improvement strategies to enable secure access, exchange and analyze patient information, and create greater efficiencies in both business and clinical processes. "Digital hospitals" provide an opportunity to improve the quality and safety of patient care, reduce inefficiencies and wastage, support world-class clinical research, and enable better management and administration of the hospital environment itself. In the digital hospital, paper is set aside, and digital information can be seamlessly exchanged between clinical, business, and administrative systems. In an idealized environment, clinical decisions can then inform business decisions, and vice versa. The greatest technology in the world won't be helpful if it doesn't fully integrate with the workflow of our clinicians to help them work more effectively and improve quality of care, so we see smart hospital systems as the solution.

Massive MIMO for Smart Cities

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Abstract: Massive MIMO has become the centre of attraction after record breaking data rate achievements by different researchers. As it is moving from theoretical to practical implementations, it has initiated to be envisioned as promising technology for next generation wireless communication which is the key requirement of smart cities. The large number of antennas deployment at the base station has become key to overcome all the hurdles to high data rate achievements within the same spectrum source. In this paper, initially evolution of Massive MIMO through conventional methods is discussed. Then various benefits and some technical challenges of this technology along with their solutions are described.

ROLE OF ELECTRONICS IN MAKING SMART CITY PROJECT SUCCESSFUL

YASHMI & POOJA ALAGH

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Abstract: Smart Cities are being developed in almost allparts of the World now and its catching the pace in India too. India is a big country in terms of size and very small in terms of internet penetration. We are ranked 179 in the world in terms of broadband speed. Soon with new Govt taking smart cities to next level ,we can expect 100 mbps to 1 gbps as standard internet speed in india . Here is a simplication of how smart cities will create jobs but before that some easy stuff to understand …What are smart cities? There's no simple definition for smart cities. The term encompasses a vision of an urban space that is ecologically friendly, technologically integrated and meticulously planned, with a particular reliance on the use of information technology to improve efficiency. The Smart Cities Council, an industry-backed outfit that

advocates the concept in India, describes them as cities that leverage data gathered from smart sensors through a smartgrid to create a city that is livable, workable and sustainable.What is smart about them?According to the Smart Cities Council, all the data that is collected from sensors – electricity, gas, water, traffic and other government analytics – is carefully compiled and integrated into a smart grid and then fed into computers that can focus on making the city as efficient as possible.This allows authorities to have real-time information about the city around them, and allows computers to attempt "perfect operations", such as balancing supply and demand on electricity networks, synchronising traffic signals for peak usage, and optimising energy networks.Why do we need them?India's is urbanising at an unprecedented rate,so much that estimates suggest nearly 600 million of Indians will be living in cities by 2030, up from 290 million as reported in the 2001 census.Services which can be provided digital in these smart citiesLooking to cash in on the $ 600 billion Digital India initiative, global tech giant Cisco today unveiled a "smart city" model to demonstrate how smart networks can play a crucial role in areas like education, healthcare, work and electronic delivery of citizen services.

Palm Vein Technology

Sumandeep Kaur & Gaganpreet Kaur

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Abstract: Palm vein technology is an authentication technology that uses vascular patterns as personal identification data. It is one of the upcoming technologies which are highly secure. It is the world's first contactless personal identification system that uses the vein patterns in human palms to confirm a person's identity. It is highly secure because it uses information contained within the body and is also highly accurate because the pattern of veins in the palm is complex and unique to each individual. Moreover, its contact less feature gives it a hygienic advantage over other biometric authentication technologies. The palm secure works by capturing a person's vein pattern image while radiating it with near-infrared rays. The Palm Secure detects the structure of the pattern of veins on the palm of the human hand with the utmost precision. The sensor emits a near infrared beam towards the palm of the hand and the blood flowing through these

back to the heart with reduced oxygen absorbs this radiation, causing the veins to appear as a black pattern. This pattern is recorded by the sensor and is stored in encrypted form in a database, on a token or on a smart card. Veins are internal in the body and have wealth of differentiating features, assuming false identity through forgery is extremely difficult, thereby enabling an extremely high level of security. The Palm Secure technology is designed in such a way that it can only detect the vein pattern of living people. The scanning process is extremely fast and does not involve any contact so it meets the stringent hygienic requirements that are normally necessary for use in public environments. The opportunities to implement palmsecure span a wide range of vertical markets, including security, financial/banking, healthcare, commercial enterprises and educational facilities. Applications for the device include physical admission into secured areas; log-in to PCs or server systems; access to POS , ATMs or kiosks; positive ID control; and other industry-specific applications.

A Practical Approach of VLC Architecture for Smart City

Ravneet Kaur & Sukhjeet Kaur(

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Abstract: The basic approach of this paper is to introduce mature visible light communication (VLC) technology as a candidate bearer technology for supporting seamless high speed broadband connectivity in smart city architecture. A smart city is one which uses its resources as smart and efficient as possible. In a smart city, the structures of the various urban systems are made clear, easy, and responsive by using contemporary technology and design. For a city to become smart and efficient, the basic key challenge is to obtain seamless connectivity among its functional layers. There are layers of connectivity in smart city architecture and these are based on commercially available RF based bearer technologies. The high speed data services demand from the users are increasing continuously, but the limited availability of RF bandwidth has resulted in poor quality of services (QoS) to the users. With the growing trend in establishing alternative communication technologies, the increasing capability of reducing RF bandwidth demand and

improving the QoS for the user. Recent improvements has been done in solid state lighting technology which has resulted in grabbing attention of optical wireless technologies such as Visible light communication. It can be used for easing the demand of the RF spectrum and migrating wireless connectivity to visible light region of the optical spectrum. The VLC has an infinite spectrum as compared to RF spectrum and can integrate into the city lighting network architecture. This paper introduces the novel architecture of obtaining high speed broadband connectivity by integrating VLC in Smart Cities. This approach is discussed with architectural designs, technological challenges and future development trends that are relevant to urban cities.

Smart city

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About Smart City:

The first question is what is meant by a ‘smart city’. The answer is, there is no universally accepted definition of a smart city. It means different things to different people. The conceptualisation of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. A smart city would have a different connotation in India than, say, Europe. Even in India, there is no one way of defining a smart city.

Challenges: This is the first time, a MoUD programme is using the ‘Challenge’ or competition method to select cities for funding and using a strategy of area-based development. This captures the spirit of ‘competitive and cooperative federalism’. States and ULBs will play a key supportive role in the development of Smart Cities. Smart leadership and vision at this level and ability to act decisively will be important factors determining the success of the Mission.

Understanding the concepts of retrofitting, redevelopment and greenfield development by the policy makers, implementers and other stakeholders at different levels will require capacity assistance.

Strategy:The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city.

Smart city

Baljot & Kulwinder
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Abstract: Smart Cities Mission is an urban renewal and retrofitting program by the Government of India with a mission to develop 100 cities (the target has been revised to 109 cities) all over the country making them citizen friendly and sustainable. The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with the state governments of the respective cities. The Government of India under the Hon'ble Prime Minister Shri Narendra Modi has a vision of developing 100 smart cities as satellite towns of larger cities by modernizing the existing mid-sized cities. Smart Cities Awas Yojna Mission was launched by Prime Minister Narendra Modi in June 2015. A total of ₹980 billion (US$15 billion) has been approved by the Indian Cabinet for development of 100 smart cities and rejuvenation of 500 others. ₹48,000 crore (US$7.1 billion) for the Smart Cities mission and a total funding of ₹50,000 crore(US$7.4 billion) for the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) has been approved by the Cabinet.

In the 2014 Union budget of India, Finance Minister Arun Jaitley allocated ₹7,016 crore (US$1.0 billion) for the 150 smart cities. However, only ₹9.24 billion (US$140 million) could be spent out of the allocated amount till February 2015. Hence, the 2015 Union budget of India allocated only ₹1.43 billion (US$21 million) for the project.

First batch of 20 cities selected in the second stage of competition will be provided with central assistance of ₹2 billion (US$30 million) each during this financial year followed by ₹1 billion (US$15 million) per year during the next three years.[4] The remaining money has to come from the states, urban bodies and the consortium that they form with corporate entities. Also, 10 per cent of budget allocation will be given to states / union territories as incentive based on achievement of reforms during the previous year.[3]

Urban Development Ministry had earlier released ₹2 crore (US$300,000) each to mission cities for preparation of Smart City Plans

m2m and IOE

Harinder Singh Mashiana

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M2m-This is the machine to machine communication. Machine to machine refers to direct communication between devices using any communications channel, including wired and wireless.

Internet of things-The Internet of things is the internetworking of physical devices, vehicles, buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange

Together the two terms encompass the hardware, software and telecommunication options that can make public services or human activities more efficient. This will pave the path to better things such as smart grid. This can be obtained by setting a single protocol as standard of communication and thus we communicate from our toaster to our smart car.

Role of Electronics in making smart city project a success

GAURAV KUMAR

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Abstract- In modern era, it would not wrong if I say this era is electronic era. We are very much familiar with the great benefits of electronics items whether it is extensive use of smart phones from booking cab to interacting with government.Role of electronics is unmatchable in todays world.

1.WHAT IS A SMART CITY IN INDIA EXPECTED TO HAVE

2.Sectors with a significant role in the

3.'Smart cities' agenda

SMART CITY

Ankit kumar

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Abstract: A city equipped with basic infrastructure to give a decent quality of life, a clean and sustainable environment through application of some smart solutions.

BASIC INFRASTRUCTURE: Assured water and electricity supply, sanitation and solid waste management, efficient urban mobility and public transport,robust IT connectivity, e-governance and citizen participation, safety and security ff citizens.

SMART SOLUTIONS: Public information, grievance redressal, electronic service delivery, citizens engagement, waste to energy & fuel, waste to compost,100% treatment of waste water, smart meters &

management, monitoring water quality, renewable source of energy, efficient energy and green building, smart parking, intelligent traffic management system multicasting.

Intelligent home making use of wireless sensing technology

Kirandeep kaur

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Abstract: The present study brings to light the emerging advances in wireless sensing technology and how this technology helps in building a Smart city. A smart city is made from smart homes. In this paper a new concept intelligent home is introduced which make use of wireless sensing technology, that are capable of monitoring the various important body vitals as well controlling technology gadgets . In this paper a new concept of intelligent wireless sensing technology which monitors health as well as control the various technical gadgets without making a direct contact with those devices. This technology being new is in its initial phases and need to be studied further.

ENABLING MOBILE AND WIRELESS TECHNOLOGIES FOR SMART CITIES

ShwetaVij

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Abstract: Smart cities have become the main agenda for governments and research organizations due to developments in the field of wireless communication. A strong and reliable infrastructure is required to make a city smart and connect objects and people together. The rapid development in smart cities poses

challenges in terms of scope. Smart cities depend on wireless technologies for providing services to its citizens in terms of security and safety, health care assistance, real time traffic monitoring. It is really difficult to provide facilities to its citizens in sustainable, efficient and safer environment without appropriate communication network. Research is going on how efficiently can wireless networks contribute towards making a city smart.

Role of Electronics in making smart city project a success

Avinash Kumar

B. Tech, 2nd Year, Department of Electronics and Communication Engineering
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Abstract: In 2030,the number of people living in cities will be almost as large as the entire population today. That's why we need completely new approaches to be taken in order to make our cities to be Smart City. Smart Cities gained important as a means of making Information and Communication Technology (ICT) enabled services and applications available to the citizens, and authorities that are part of a city's system. It aims at increasing citizens' quality of life, and improving the efficiency and quality of the services provided by governing entities and businesses.

A smart city uses electronic, digital technologies or information and communication technologies (ICT) to enhance the quality and performance of urban services, reduce costs and resource consumption, and engage more actively with its citizens. By effectively leveraging telecommunications technologies, smart cities can connect various "things" (e.g., sensors, devices, analytics tools, etc.) to each other, either directly or via the Internet.

Smart Cities: Illusion or Possible Reality Project

NavjotSingh,Shivangi,Sahil,PrabhjotSingh,

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Abstract: In this paper**,** a challenging effort was made to present the new investmentproject of Prime Minister Mr. NarendraModi that **'Make in India'** is the new mantra and the objective was to encourage the production of goods within the country and Making India the manufacturing hub of the world economy. The aim of the project showing a pure classical economics there is going to be a demand and then there would be producers who would be incentivized to supply goods and Services to meet that demand. This paper covers issues of the make in India, sectors covered, worldwide and positive responses and some critics. However, this paper is concluded as optimistic manner that the Make in India' economically viable? What are the challenges that the project and movement will face? What about the projects that are currently running under 'Make in India'? Can India compete in the global market? We will try to find the answers to all of these questions in the next couple of years.

SMART CITY – SMART SOLAR ENERGY BASED WAREHOUSE CONTROL SYSTEM

Shruti Sharma, Prabhjot Kaur,Ravneet Kaur Gill & Chahat Jain

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***Abstract*—**Smart cities gained importance as means of making services and applications available to citizens and authorities as a part of city's system.It aims at increasing citizen's quality of life and improving the efficiency and quality of services and optimizing energy efficiency with the help of automatic controls that reduces time, energy, human efforts. Here is a SOLAR ENERGY

BASED WAREHOUSE CONTROL SYSTEM .It deals with the basic information about the warehouse problems and calamities along with various sensors to resolve them in a warehouse system. It has Fire sensor, Humidity sensor, temperature sensor, rain sensors ,LDR to prevent huge losses due to certain problems.Password Security is used to avoid unauthorized access whose password is changing every instant of time .The interfacing is done with 8051 Microcontroller. So it gives the complete knowledge about problems and solutions related to a warehouse.

Electric Utilities Must Prepare for New Roles in the Smart City Transformation

Rupindersingh,Harpreetsingh,Harsimaranjitkaur

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Abstract: This paper explains the various requirements for a city to upgrade into a smart city. A smart city is a well planned city which provides environmental effective and technological sound services for the well being of its citizens. A smart city can help to reduce problems of transportation, pollution, unemployment and provide business opportunities to the people.Index Electric utilities are facing a need and opportunity to transform their business due to the bidirectional nature of distributed generation and energy storage. This is just one of several fundamental changes that the smart cities movement is driving to reshape how fundamental services are delivered and managed.

Role of electronics in making smart city project a success

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Abstract: The objective of smart city mission is to develop the core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' solutions in the city. This mission will improve the liveability of the whole city.The city should set an example for upcoming and aspiring developing cities. This goal can be achieved by numerous steps and application of electronics and Information technology in various areas like e-governance, intelligent traffic control , IT connectivity, air quality monitoring sensors, safety and security via mobile apps. Citizens can be empowered by using mobile-based tools.

SMART HIGHWAY SYSTEM

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Abstract: Today road safety is one of the key concern for administration in world therefore we need a smart system which helps to generate energy, improve efficiency and stop wastage of public lights. In this project we are implementing a smart highway system which not only generates electricity through speed breakers but also utilize it in a smart manner and these energy utilization techniques makes this system more beneficial for people. Accident avoidance task at the sharp turn of highways - when a car driver does not know that any other vehicle is coming from another side or not and it will lead to an accident but in this project with accident avoidance technique, we can prevent the accidents to a great extent. Reduces wastage of energy - means in case if no one is present on a road then only half of traffic lights will be operated. Electricity generation using speed breaker is one of the most technical method to generate the electricity. To avoid wastage of electricity in day or after midnight we are using LDR sensor and IR sensors to control this wastage of electricity. It is very useful in crowded areas. Generated energy can be used for traffic light purpose.

GARBAGE MONITORING SYSTEM USING GSM MODEM

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Abstract: This is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via LCD. The LCD screen shows the status of the garbage level. The system puts on the buzzer when the level of garbage collected crosses the set limit and also a message will be sent to the municipal corporation or the user who is monitoring this. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of AVR family microcontroller, LCD screen, Wi-Fi modem for sending data and a buzzer. The system is powered by a 12V transformer. The LCD screen is used

to display the status of the level of garbage collected in the bins. This project can also be used in college campus. Lots of garbage material created during functions and festivals so we can also use this project.

ACCELEROMETER BASED WIRELESS GESTURE E-MOUSE

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Abstract: Mouse cursor of computer move according to movement of wireless gesture sensor. In this project we will use accelerometer to move our cursor forward, backward, left and Right wirelessly. For wireless operation we will use RF technology. We will use accelerometer sensor with HT12e encoder IC which will give signal to RF module 433 MHz. In receiver end we will receive data on RF module. RF module will give that 8 bit data to HT12D. Decoder will convert that 8 bit data to 4 bit and will give output at pin 10, 11, 12, and 13 respectively in parallel fashion. We will give this parallel data to Microcontroller.

Microcontroller will control motors according to Received data. In this project first of all we will use ADXL335 as sensor to get axis x, y and z readings & we use IC 89C52 microcontroller as a main processor. IC 89C52 is a 40 pin microcontroller. We program this IC with the help of computer. Software is written in the assembly language and then transfer into the blank IC with the help of programmer kit. The roadmap ahead for this kind of implementation has a spectrum of improvement channels and applications that can be worked. The effective working and simulation of the same would help in the application in the virtual world interfacing of human gestures as more and more.

BLIND STICK WITH GSM MODULE

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Abstract: Our basic idea is to help blind people to detect their path properly. If there is any obstacle in their path this blind stick will help to notify them, similarly water on their path or any hot material around them can also be detected.GPS and navigation system can be added to blind stick which will guide them with voice messages. Guardian can feed the place where they want to go and this blind stick will help them to find proper and less traffic path so that they can travel safely. Ultrasonic sensor will help to detect moving and stationary obstacles, vehicles, certain depths or stairs in between their path. Water sensor senses the water on road and fire/heat sensor sense certain heated material around them so that these thing can't harm them. Buzzer or vibrator speaker will be used to notify them that certain obstacle or water is in between their path. If person went beyond guardian range then this blind stick will notify their guardian through sms using RF module and GSM MODEM. Existing devices are able to detect and recognize objects that emerge on the floor, but a considerable risk also includes the objects that are at a sudden depth, or obstacles above waist level or stairs. Thus we were motivated to develop a smart white cane to overcome these limitations. We accomplished this goal by adding ultrasonic sensors at specific positions to the cane that provided information about the environment to the user through audio feedback.

AUTOMATIC RAILWAY TRACK SECURITY SYSTEM

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Abstract: Railway is the backbone of transport system in India. Rail accidents occur more due to derailments than collision or fire in trains. These derailments are due to cracks in the railway tracks. Therefore, there is an immense need of crack detection and security system. This is to avoid rail accidents by using latest communication technologies. In this project GSM

communication protocols are used to convey the message of crack detection via SMS. This project discusses the critical safety techniques for high-speed train operation environment based on the train control system. In order to ensure safe operation of trains, we propose a wireless network access framework according to the monitoring network of surrounding environment and the deployment of transition network to avoid collision of trains and obstacle detection. System has ability to pinpoint the location and other attributes of an operational train in an economical accurate manner. The goal of this work is to design and implement a cost effective and intelligent full-fledged and wireless based Train Anti Collision and detection System to avoid accident.

ANDROID CONTROL ROBOT

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Abstract: The project aims in designing a Robot that can be operated using Android mobile phone. The controlling of the Robot is done wirelessly through Android smart phone using the Bluetooth feature present in it. Here in the project the Android smart phone is used as a remote control for operating the Robot. The controlling device of the whole system is a Microcontroller. Bluetooth module, DC motors are interfaced to the Microcontroller. The data received by the Bluetooth module from Android smart phone is fed as input to the controller. The controller acts accordingly on the DC motors of the Robot. In achieving the task, controller is loaded with a program written using Embedded Assembly language. With the help of this technology in future we can operate multiple things just by our smart phone rather than using different remote controls. With future development we can make a robot capable of travelling with human on it. This same technique can be used by military and police for monitoring place remotely.

MATLAB BASED GNE CAR PARKING SYSTEM

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Abstract: In this project we showed that how we can use the sensors for advanced car parking system. We will also show the parking space, for that we will use IR sensors. They will detect the signal and will give it to microcontroller. Microcontroller will get the signal and will display where the space is available to park the car on priority basis. There will be barrier which will close when parking reach at maximum value. Also we are using MATLAB for logo recognition. Each car will be carrying college logo which will be recognized and only then the entry of that particular vehicle is allowed. In case, there is no logo of college on vehicle, entry will be prohibited. Whenever the vehicle wants to enter the parking area, first of all its authorization will be checked using MATLAB software. It will look for authorization logo i.e, whether there is GNE logo on the vehicle or not. If it is a valid vehicle then the microcontroller will look for parking slot for that particular vehicle. Availability for parking is detected using IR sensors. If there is a vacant space in the parking, it will be displayed on the LCD interfaced to the microcontroller. If parking slot is available, the barrier will be raised and parking slot will be allotted to the vehicle and if the parking is full, access will be denied until any vehicle which was parked there, moves out from there. Hence leaving a vacant parking slot for other vehicles.

SOLAR SEEKER DEVICE

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Abstract: In this project we use one rotating platform which is mounted on the dc motor. When motor rotates, the platform also rotates and changes its direction with the help of two proximity sensors on each side. One photo sensor is mounted on the platform. When light falls on the platform then photodiode senses the light, at the same instant stops the dc motor. Now platform is stopped automatically. When platform stops under the maximum intensity of light then solar

seeking device capture maximum energy. We are using this technique with solar seeking device to capture the maximum sun light.

AUTOMATIC MULTILEVEL CAR PARKING SYSTEM

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Abstract: Automatic Multilevel Car Parking is a method of parking and retrieving cars that typically use a system of pallets and lifts. The intention is to park more cars in the same space, reduce the space needed to park the same number of cars. Car parks can be situated above or below ground or a combination of both. This makes the system modernized and thus space saving one. In this method of parking the user need not to park his/her car at allotted space. The user just need to place his car at pre-decided place and an automated machine will check for the vacant space and will take the car to that space automatically through moving and up-down mechanism and then place the car at required place. The machine will then come back to its defined position. Robotic Parking are nowadays used in various countries where there is congested place. This is a low cost and an effective method of parking using modern technology. this project is to design an automated robotic parking system and understand the problems that are faced during implementing the projects and find the solution for that.

AUTOMATIC BOOKS SORTING MECHANISM USING RFID

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Abstract: This project is very helpful to sort out books according to their identity. We will use here two types of books with single sorting mechanism. This project is prototype of various applications like bisleri bottle industry where size of bottles selection doing automatically and object sorting according to their sizes etc. This project is designed over conveyer mechanism. 3 feet conveyer assembly will do this working. The conveyer mechanism is used in various

applications to do their work. For sorting concept, we shall use here RFID module unit. We will make a setup of RFID in starting of conveyer. We use a small plastic box and put RFID card inside this box. This plastic box will represent a book. We will use two boxes for two books of physics and chemistry. When box will move from conveyer then RFID senses the RFID card and sort out the books. We will make a single sort assembly on conveyer.

INTERFACING SEVEN SEGMENT DISPLAY

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Abstract: Interfacing of seven segment display is done with 8051 microcontroller. There are four ports in microcontroller i.e. P1, P2, P3, P4 and seven segment is connected with P2 of microcontroller. Seven segment displays are used to indicate numerical information. A seven segment display is most basic electronic display device that can display digits from 0 to 9. The most common configuration has an array of eight LEDs arranged in a special pattern to display these digits. They are laid out as a squared off-figure '8'. Every LED is assigned a name from 'a' to 'h' and is identified by its name. Seven LEDs 'a' to 'g' are used to display the numerals while eight LED 'h' is used to display the dot/decimal. Seven segments are generally available in ten pin package. These eight pins correspond to eight LEDs, the remaining two pins are common and internally shorted. Seven segment displays are used in digital clocks, in electronic meters for display numerical information, digital readouts display.

PROBOT: ANDROID PHONE CONTROLLED CAR THROUGH BLUETOOTH

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Abstract: Our car is totally wireless and controlled by any mobile phone through bluetooth connectivity, based on "arduino UNO" and has more features. The project aims in designing a

Robot that can be operated using Android mobile phone. The controlling of the Robot is done wirelessly through Android smart phone using the Bluetooth feature present in it. Here in the project the Android smart phone is used as a remote control for operating the Robot. The controlling device of the whole system is a Microcontroller. Bluetooth module, DC motors are interfaced to the Microcontroller.

REMOTE CONTROL CAR: A SMART PHONE CONTROL CAR

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Abstract: We are presenting a new form of Remote Control Car, A Smart Phone Control Car. This car is based on technology of arduino. We use arduino, motor shield and bluetooth module to make the non useful things in moving form. Arduino is the brain of the car and control both motor shield and bluetooth. On the other hand, motor shield helps to control the motor use to run the tyres of the car and bluetooth module is used to connect it from so that you can play with car. We made our own app ARDUINO CAR to control the brain of the car. This app control the speed of the car and steering. We are further thinking to add camera on the car which will display images on the Smart Phone. We have taken the help of the Google and You tube and our Brain also to turn the dump into a CAR.

AUTOMATIC DEFECT DETECTING USING OSTU THRESHOLDING TECHNOLOGY USING MATLAB

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Abstract: Automatic thresholding has been widely used in the machine vision industry for automated visual inspection of defect a commonly used thresholding technique, the ostu method provides satisfactory result for thresholding an image with a histogram of bimodal distribution. This method however fails is histogram is unipolar or close to unimodal. For defect detection

application, defect can range from no defect to small or large defects which means the gray level distributions range from unimodal to bimodal.Here we revised ostu method for selecting optimal thresholding value for both unimodal and bimodal distribution and tested the performance of revised, the valley-emphasis method, on common defect applications.

HEART RATE MONITORING USING 8051

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Abstract: The Project describes a technique of measuring the heart rate through a fingertip using a microcontroller. While the heart is beating, it is actually pumping blood throughout the body, and that makes the blood volume inside the finger artery to change. This fluctuation of blood can be detected through an optical sensing mechanism, consisting of infrared light emitting diode (IR LED). The signal can be amplified further for the microcontroller to count the rate of fluctuation, which is the heart rate. IR LED transmits an infrared light into the fingertip, a part of which is reflected back from the blood inside the finger arteries. The photo diode senses the portion of the light that is reflected back. Every time the heart beats the amount of reflected infrared light changes, which can be detected by the photo diode. With a high gain amplifier, this amplitude change of the reflected light can be converted into a pulse.

It is easy way to monitor pulses from heart on finger, measures heart beats pulses with microcontroller 8051. It calculate heart beats quickly with the help of IR sensor by placing the finger between the sensor and display their count on the LCD.

WIRELESS GAS LEAKAGE PREVENTION AND ALERT SYSTEM

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Abstract: The main aim of this project is to develop a gas leakage control and Auto Cut-off system. This system will detect any chances for a gas leakage from cylinder-based appliance (e.g. LPG cylinder). Usually fire occurs in a cylinder- based appliance due to leakage of gas through the gas pipeline. By using a gas sensor, the above reason can be detected in advance. With the use of an alarming system the user can be alerted about this. Also this Project is Going to turn off the gas cylinder regulator so that further prevention from blast can be done. For this we put a DC motor drive system over regular nob to switch it off automatically.

HOME AUTOMATION SYSTEM

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Abstract: In this project we have made a rudimentary design of a home automation on a printed circuit board using 32 bit microcontroller atmega 32 . The softwares used during the creation of the system are avr studio, keil and proteus professional. In the development of the software, finite state machine method has been used to reduce the complications faced. A dual tone multi frequency module has been used in the circuit which basically respond to the frequencies of the sounds when the keypad numbers of cell phones are pressed. The frequency from the keypad is given as an input to the microcontroller which processes it and based on the software controls the peripherals connected to It. Some important components used in the project are: Atmega32 microcontroller, dtmf module , relays, LEDs, crystal oscillator.

HAND MOTION CONTROL ROBOTIC VEHICLE

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Abstract: This system is very beneficial for disabled people as it allows movement of a robotic vehicle on the basis of hand movements. The person just has to move his hand in order to move the vehicle in forward, backward, left or right direction. So the user does not have to press any buttons. The system includes a receiver circuit designed which will be mounted on a top of a glove which the user has to wear. The circuit on the vehicle includes RF receiver, 8051 microcontroller and Driver IC to operate the motors. The receiver circuit that is on the top of a glove includes atmega family microcontroller interfaced to the accelerometer. The commands that are detected by the IC on this circuit are sent to the RF transmitter which then forwards the commands to the RF receiver. The RF receiver then sends the commands to 8051 microcontroller which processes the commands so that the vehicle moves in the specified direction.

PICK AND PLACE LINE FOLLOWING ROBOT

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Abstract: The aim of this project to design an autonomous robot with complete system allow the robot wander about its environment and to interact with certain object that its encounter. In order to achieve the aim of this project, several objectives are needed to be complete. In this scenario, the industry having a problem by human life in some hazardous duty service. Robot can work in environments so hazardous that an unprotected human would quickly die. It will now detect the obstacles that come in its path and perform the pick and place operation while following a black line.

SWITCHING SYSTEM USING DTMF MODULE

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Abstract: DTMF Based Home Automation System" we are going to control our home appliances. DTMF controlled home appliances projectworks over mobile DTMF technology that exists in Dial tone. DTMF stands for Dual Tone Multiple Frequency. There are some frequencies that we used to create DTMF tone. In simple words by adding or mixing two or more frequencies generates DTMF tone.

SMART HOME AUTOMATION WITH SMART APP

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Abstract: