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TECHNIFESTO

TOWARDS FUTURE...

MESSAGE

Dear Technocrat,

It is my great pleasure to present this issue of technical magazine "TECHNIFESTO". The purpose of this magazine is to provide opportunity and platform for the young technocrat to express their talent which will also be beneficial to all others to enhance their technical knowledge.

It is very true that all technocrats must know the basic fundamentals as well as should be able to acquire new knowledge technology quickly for global competition and move demanding engineering required and regulation. Keeping this in front, it is essential to develop new way to get the information easily. I believe that this magazine will serve the purpose.

I forward my wishes to the editorial team of this magazine for taking great efforts to publish this issue of the department.

Hereby I appeal all budding technocrats to join us and share their knowledge to make our magazine more dynamic, transparent and professional.

Mr. H.P. Chaudhari
Head of Department
Instrumentation Dept.
AISSMS IOIT, Pune.



EDITORIAL

'TECHNIFESTO' magazine has always been an crucial element in the times when it comes to technology and has always maintained the essence of it. In this issue our objective is to provide platform for students to augment the technology focus and scope of it. We are also going to share our achievements and departmental activities.

On behalf of the entire M-team (Magazine Team) I would like to thank our Principal Dr. P.B.Mane and Head of Dept. Mr. H. P.Chaudhari for their kind support and encouragement for accomplishing this edition. Also I would like to thank the students for their active participation.

We invite all our readers of 'TECHNIFESTO' magazine to enjoy reading it .

Hope you Like it.

Ms. N.S.Nagdeo
Editor: 'TECHNIFESTO'
Assistant Professor
Instrumentation Dept.
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1. TECHNOLOGY FOCUS

The Artificial Skin That Could Deliver the Sense of Touch Directly to the Brain

The skin is the largest organ of the body, with a total area of about 2 square metres. The skin protects us from microbes and the elements, helps regulate body temperature and permits the sensations of touch, heat and cold.

Zhenan Bao at Stanford University has invested a lot of her research into building. Her team's latest feat is an "artificial skin" that's capable of providing the sense of touch directly into the brain cells of mice and is initially aimed for use in prosthetic limbs to give the users the full sense of touch.

While the mechanism for transferring the sensory signals from the artificial skin to the brain is something called "optogenetics"—which uses light

to control cells in living tissue—the basis for the artificial skin is a unique pyramidal geometry of carbon nanotubes (CNTs).

"Using pyramids allows us to tune the sensitivity and range of sensors very easily, which was important for this project," explained Alex Leslie Chortos, the first author of the paper published in *Science*, in an e-mail interview. "We had to optimize the electrical impedance and pressure range of the sensors to work with the other circuit components. By changing things like the size and spacing of the pyramids, we could readily optimize the sensor to have the characteristics that we needed."



Chortos and his colleagues discovered that using an unstructured film resulted in a sensitivity that was much too low for what they were trying to do. While it is possible to produce a pressure sensor with this sensitivity that does not have pyramids, it would have entailed doing things like changing the modulus of the rubber, which is relatively more difficult and has other negative effects.

In operation, as the pressure on the CNT sensor increases, the CNTs are compressed closer together, which reduces the resistance through the sensor.

"The carbon nanotube sensor detects the stimuli and the compression of the composite reduces the resistance and increases the current," explained Chortos. "This signal is reported by coupling the sensor to an electrical oscillator that

creates voltage pulses. As pressure is applied to the sensor, the frequency of the voltage pulses generated by the oscillator increases."

The device the Stanford researchers developed relies on two core technologies: the pressure sensor and the flexible electronics layer. According to Chortos, the pressure sensor could be used in wearable electronics and smart robotics, while the flexible electronics layer (made by Xerox Palo Alto Research Center) could measure information from sensors that are used in wearable electronics and flexible displays.

A prosthetic limb that could deliver the sense of touch directly to the brain would be groundbreaking. But work still needs to be done to for that to happen.

"Before this technology could be used in prosthetic limbs, we would need to improve the stability and durability of the circuit layer of the device and improve the fabrication processes to allow scalable production of sensors skins that include all of the necessary circuit components in a compact form," said Chortos.

The artificial skin the Stanford team has developed could be a general platform for

generating electrical signals that are compatible with biology. While they demonstrated this technology is capable of serving as a pressure sensor, real skin has many other functions.

"Future work will involve increasing the range of sensory capabilities by including sensors for stretching (strain),

temperature, and vibration in addition to pressure," said Chortos. "One important component of future work will involve working with a collaborator who has experience with electrically interfacing with nerves in live animals. "

- -Prof. Namrata Nagdeo

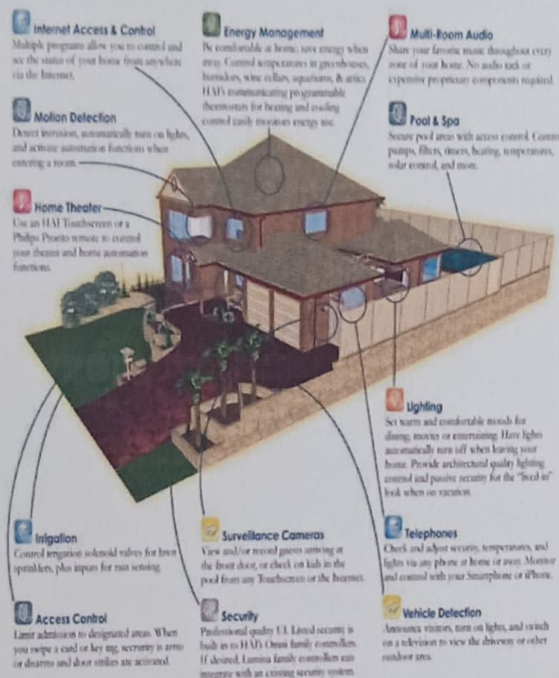
Importance Of Home Automation Information Technology

It sounds futuristic but today the technological world's main focus is to automate every possible thing to take advantage in providing ease in life. Home Automation, also known as domotics is one among the different types of automations. Home automation refers to the use of computer and information technology to control home appliances and features (such as blinds, lighting, ventilation and many others). Systems can range from simple remote control of

lighting through to complex computer or microcontroller based networks with varying degrees of intelligence and automation. Through the integration of information technologies with the home environment, systems and appliances are able to communicate in an integrated manner which results in convenience, energy efficiency, and safety benefits.

Home automation has been a feature of science fiction writing for many years, but has only become practical since the early 20th century following the widespread introduction of electricity into the home, and the rapid advancement of information technology. The emergence of electrical home appliances began between 1915 and 1920 and the decrease in domestic servants meant that

households needed cheap, mechanical replacements. Ideas similar to modern home automation systems originated during the World's Fairs of the 1930s.



With the invention of the microcontroller, the cost of electronic control fell rapidly. Remote and intelligent control technologies were adopted by the building services industry and appliance manufacturers worldwide, as they offer the end-user easier accessibility and greater control of their products. During the 90's home automation rose to prominence.

Home automation is a modern technology that modifies your home to perform different sets of tasks automatically. Today, automation technology is gaining more recognition

among people not just for home modification but in industrial and business sectors too. Home automation technology is constantly improving its flexibility by incorporating modernized features to satisfy the increasing demands of people.

Home automation technology is growing drastically and its demand is increasing in a wide range of sectors. There are many factors that are responsible for home automation's growing importance. Some important benefits are:

- **Affordable:**

Home automation process does not require a huge big investment. A proper planning during the construction phase will allow considerable savings for automation.

- **Ease of use and comfort:**

Easier operating and controlling of the technology due to its simple procedures that are easy to learn and implement. It maintains human comfort without human intervention.

- **Enhanced performance:**

Proper wiring and computer control are the important factors that determine the effective performance of the automation

technology. Usually, home automation systems that are installed by professional installers are reliable and perform effectively without causing frequent failures.

- Improves the security features:

One of the important aspects of home automation technology is its ability to enhance the security features of the home without requiring much change in the architecture. For example, motion detector can be used to detect even the slightest movements around homes without the need for wandering.

- Energy savings:

By controlling temperature and lighting based on the programmed schedules, automation systems can reduce the energy bills significantly. Now, you can move to distant places without any

worries regarding your energy bills by making use of automation systems

When it comes to home automation, there are a few steps that must be followed in order to implement the home automation technology effectively. First, the automation needs should be planned. For example, if the overall objective is to improve your security system, then a checklist all its requirements is required before starting the automation process accordingly. If lighting units are suspected to consume a large amount of energy then they could be automated to avoid unnecessary waste of electricity. Such a step would provide comfort, security and save power. Home automation technology is growing drastically and its demand is increasing in many sectors.

-Mayank Pahade, B.E

Wireless Sensor Networks

With the advances in the technology of micro-electromechanical system (MEMS), developments in wireless communications and WSNs have also emerged. WSNs have

become the one of the most interesting areas of research in the past few years. Here, we look into the recent advances and future trends in WSNs.

WSNs are usually composed of small, low-cost devices that communicate wirelessly and have the capabilities of processing, sensing and storing. The development of

WSNs was motivated by military applications such as battlefield surveillance. WSN are being used in many industrial and civilian application areas, including industrial process monitoring and control, machine health monitoring, environment and habitat monitoring, healthcare applications, home automation, and traffic control. A WSN generally consists of a base-station (also called as gateway sometimes) that can communicate with a number of wireless sensors via a radio link. Wireless sensor nodes collect the data, compress it, and transmit it to the gateway directly or indirectly with the help of other nodes. The transmitted data is then presented to the system by the gateway connection.

RECENT ADVANCES

Recent advances in wireless and electronic technologies have enabled a wide range of applications of WSNs in military sensing, traffic surveillance, target tracking, environment monitoring, healthcare monitoring, and so on. Here we describe such type advances in WSN and their applications in various fields.

Smart Home/Smart Office

Smart home environments can provide custom behaviors for a given individual.

Considerable amount of research has been devoted to this topic. The research on smart homes is now starting to make its way into the market. It takes a considerable amount of work and planning to create a smart home. There are many examples of products currently on the market which can perform individual functions that are considered to be part of a smart home. Several useful applications which take advantage of information collected by WSN are presented in.

Military

New and emerging technologies, such as networks, support military operations by delivering critical information rapidly and dependably to the right individual or organization at the right time. This improves the efficiency of combat operations. The new technologies must be integrated quickly into a comprehensive architecture to meet the requirements of present time. Improvement in situation awareness is must requirement. Other important application is detection of enemy units' movements on land/sea, sensing intruders on bases, chemical/biological threats and offering logistics in urban warfare. Command, control, communications, computing,

intelligence, surveillance, reconnaissance, and targeting systems are well described in .

Industrial & Commercial

Since the long time wireless transmission of data is being done in industrial applications, but recently it has gained importance. Successful use of wireless sensors in systems such as supervisory control and data acquisition has proved that these devices could effectively address the needs of industrial applications. The critical process applications of WSNs in industry are monitoring temperature, flow-level, and pressure parameters.

Traffic Management and Monitoring

Every big city is suffering from traffic congestion around the world. A sincere effort is being made to solve the traffic congestion. Congestion can be alleviated by planning managing traffic. A real-time automatic traffic data collection must be employed for efficient management of rush-hour traffic. Research on this topic is considered as part of the Intelligent Transport System (ITS) research community. ITS is the application of the computers, communications, and sensor technology to surface transportation.

Agriculture

Agriculture can also be benefited by the deployment of WSN to get the information regarding soil degradation and water scarcity. With help of WSNs we can check the clean water consumed in irrigation and manage it.

Biomedical/Medical

The uses of WSNs in biomedical and medical are in growing phase. Biomedical wireless sensor networks (BWSNs) show the future opportunities for supporting mobility while monitoring vital body functions in hospital and home care. There is a requirement for BWSN to develop in order to cover security handling, improved signal integration and visualization. As the Internet usage has become popular among people, e-services for the healthcare which is commonly known as e-Health, have recently attracted significant attention within both the research society and industry. Followings are several ongoing projects for healthcare using WSN:

CodeBlue- an architecture proposed for tracking and monitoring of patients.

ALARM-NET - a WSN built for assisted-living and residential monitoring.

GlucoWatch G2 - use WSN to research
wearable personal health system that will

monitor and evaluate human vital sign

-Swapnil Hatte, B.E

3D PRINTED CARS

The latest technology inventions in 3d printing are rapidly changing how things are being made. It's an emerging technology that is an alternative to the traditional tooling and machining processes used in manufacturing.

At the International Manufacturing Technology Show in Chicago, a little known Arizona-based car maker created a media sensation by manufacturing a car at the show.

It was full scale, fully functional car that was 3d printed in 44 hours and assembled in 2 days.

The car is called a "Strati", Italian for layers, so named by it's automotive designer Michele Anoe because the entire structure of the car is made from of acrylonitrile butadiene styrene (A.B.S) with reinforced carbon fibre into a single unit.

The average car has more than 20,000 parts but this latest technology reduces the

number of parts to 40 including all the mechanical components.

"The goal here is to get the number of parts down, and to drop the tooling costs to almost zero." said John B. Rogers Jr., chief executive of Local Motors, a Princeton and Harvard-educated U.S Marine.

"Cars are ridiculously complex," he added, referring to the thousands of bits and pieces that are sourced, assembled and connected to make a vehicle.

This technology can use a variety of metal, plastic or composite materials to manufacture anything in intricate detail.

People tend to want what they want, when they want it, where they want it, and how they want it, which makes this technology disruptive in the same way digital technologies used by companies like Amazon and Apple disrupted newspaper, book and music publishers.

One of the challenges with collecting antique cars is replacing parts. You can't buy them because they're obsolete and having a

machinist tool the part doesn't always work and often requires costly modifications until the part fits.

So Leno 3d printing technology to make parts for his cars.

"These incredible devices allow you to make the form you need to create almost any part".

John B. Rogers believes that in the near future a car will be made in just 60 minutes.

The company is already organizing a worldwide network of "Microfactories" where you can order and pickup your personal personalised, customized car.

-Mrunal Pathak,S.E

2. SMART CITY

APPROACH



Five ICT Essentials for Smart Cities

Information Technology is changing the evolution of cities. The notion of "growing" cities based on implementing correct urban planning is being replaced with the idea of making a city "smart". The Internet is changing the traditional urban planning model and compelling planners to not only consider the physical planning of a city but also to consider the use of Information

Technology to make the economy, environment, mobility and governance of a city more efficient and effective. Even though the term "smart

city" is relatively novel, the development of a smart city can vary dramatically depending on the approach that is taken regarding policymaking for the urban growth of the city (Chourabi, et al., 2012). A number of definitions for the term "smart city" exist.

One of the more widely used definitions is outlined by Bakici, Almirall, & Wareham (2013) who define smart cities as "cities that utilise information and communication technologies with the aim to increase the life quality of their inhabitants while providing sustainable development" (Bakici, Almirall, & Wareham, 2013, p. 137). From this definition we can see that ICT plays a pivotal role in making city more adapted to the contemporary needs of

its citizens. Other definitions of smart cities may not place such an emphasis on the central role played by ICT, nevertheless many definitions include some reference to the use of ICT for making modern cities more suited to the needs of citizens (Chourabi, et al., 2012). For example, Caragliu, Bo, & Nijkamp (2009) view cities as smart when "Investments in human and social capital and traditional (transportation) and modern (ICT-based) infrastructure fuel

sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory government " (p. 6). Harrison et al (2010) argue that a city is smart when it manages to connect the physical infrastructure, the IT infrastructure, the social infrastructure, and the business infrastructure to leverage the collective intelligence of the city. Regardless of whether ICT takes centre stage in the development of a smart city or not, it is clear it is a key driver of smart city initiatives and thus needs attention from city planners and the various stakeholders interested in sustaining and improving quality of life in urban areas. There are five essential ICT elements that are needed to ensure a solid ICT foundation exists for nurturing the "smart" agenda of a city.

Elements-

#1 Deployment of Broadband Networks

#2 Use of Smart Devices and Agents

#3 Developing Smart Urban Spaces

#4 Developing Web-based Applications and e-Services

#5 Opening up Government Data

-Harshali Narkhede, S.E

Making Pune A Smart City Through Technology Initiatives

According to International Smart Cities Council, A smart city can be defined as the city which is Digital Technology embedded across all city functions. In simple words, term **SMART CITY** is used when a city has the ability to respond as promptly as possible to the needs of its citizens. These needs can be related to anything like Education, Health care, Transportation, Public Administration, Resources, Security etc.

But to build or develop a smart city there are many concerned parameters which are needed to be updated or which are to be made advanced. Sectors like IT, Automation, Traffic Management, Electronic Transport, Public Utilities, Security Enhancement, Use of Renewable Resources, Solid Waste Management plays an important role in developing a smart city. Thus this sectors must be developed properly.

When we talk about **IT(INFORMATION TECHNOLOGY)** sector, it has the most vital part in building smart city.

It is so because to connect a variety of living services to public infrastructure IT is necessary. To enhance the security, safety, to improve the efficiency of municipal services and for the betterment of citizens to improve their standard of living connectivity is indeed necessary. These connectivities can be done by advancement of IT sector by setting up Wi-Fi or Broadband setups around the city.

One of the most important part of any city is its transport facility. But for smart city, its transport must also be smart i.e.

ELECTRO MOBILITY- transport must be **ELECTRONIC**. In future when the city people will drive electronic vehicles, this will be the most important advancement for any city. But cost might be the concern. Only solution for this is the Cheaper Batteries. People must be encouraged towards using Electronic Transport as there will be less use of Non-Renewable Sources i.e. Fuels. People can be encouraged by following ways; Re-using old batteries, Making use of spare renewable sources, By using Electronic Vending machines, Wireless charging(Solar).

As the **Electronic Transport** must be used for developing the smart city, its management is also must. That is **TRAFFIC MANAGEMENT**. Nowadays traffic growth and the problem of congestion on highways

and in the cities is growing at high rate . To avoid this Smart Traffic Management Systems can be setup which can monitor factors like traffic speed and density and, when traffic volumes increase, impose speed limits to help maintain the flow. This Smart Traffic Management Systems can be done by developing Traffic Management Centres (TMCs) for monitoring traffic by automate surveillance. This can be done by installing camera's, sensors at the traffic prone areas.

For any city its Infrastructure plays a major role in its development. For smart city its infrastructure must be automated. **AUTOMATION** sector is very much useful for such infrastructure.

Example for an automated infrastructure can be **SMART BUILDINGS**. Here, solar panels are installed at the roof top of the buildings so that it can collect and store the solar energy. These solar energy can be used for further application useful for that building. Energy meters must be installed so that use of energy resources can be monitored.

Among the bench marks for smart cities, besides an efficient public transport, electricity, wi-fi connectivity, there is also need for civic bodies to formulate building and parking standards.

A 'smart city' is developed upon numerous distinct elements and **SOLID WASTE MANAGEMENT** is one of these vital aspects. Solid waste management is of grave importance to an urbanized region which faces the constant pressure of increasing population density, rising infrastructural demands and expanding inflow of immigrants. Hence, the need for creating a stronger civic sense among the citizens is of pivotal importance for the success and fruitful implementation of solid waste management system. One of the innovative way for solid waste management is Automated Waste Collection System which can remove the conventional methods like door to door, community bins collection etc.

A key building block of any system is its **WATER MANAGEMENT**. With populations in cities growing, it is inevitable that water consumption will grow as well. So to manage the proper distribution of water all homes must be installed with **Smart Water Meters**, which can use to identify leaks, create pricing mechanisms and catch people who are violating water use restrictions.

In every city its citizen play a lead role towards its development. For making city into smart city or digital city, its citizen

must also work in a smart way, this can be done by bringing local people into local governance and making decision by use of open innovation processes and **E-Governance by E-Participation**. E-Participation in this era is one of the modern feature of a city. Through this any citizen can directly post/send their views/idea for development of the city to the government. When every citizen of the city participate the collective intelligence of human communities tends to evolve toward higher order complexity and harmony based on the institutions of the city that enable cooperation in knowledge and innovation. This innovations can be used for making city smart.

To build a smart city its **EDUCATION** facility is an important factor. I think in every smart city a **Knowledge centre** must be build up for the people. So that they get proper facilities to built their interest. The centre must contain information, public figures and useful links related to the topics Smart Cities, sustainability, energy saving, technological advancement , connectivity etc. A weekly magazine must be published on the current issues related to the country, economy so that young generation of the city will be updated on such vital issues.

For developing PUNE into SMART we also have examples of many cities to look at like: -Helsinki as a Smart city cluster which is particularly focusing on mobile and wireless technologies and applications.

-Manchester using modern technologies to promote community engagement, capacity building and social capital

-Barcelona Here Smart City concept was used as a strategic tool and the pillars are infrastructures, open data, innovation service, human capital.

Information System must be set up to manage all the city aspects. City Dashboard can be a innovative way to keep the up to date information organised according to the respective subject.

If every citizen of Pune feels the **Ownership Of The City** then surely using the above technological innovations **PUNE** can become a **SMART CITY**.

-Mayank Pahade, B.E

Solutions For Making Pune A Smart City

We belong to a land where flourished the "Indus Civilization". The Harappan culture was distinguished by its system of Town Planning. It had its own citadel. The house in the cities followed grid system. The road cut across each another almost at right angles. There was a public place of Great bath. They developed drainage system with manholes. With this heritage in past, we certainly can make our present smart, sustainable, eco-friendly and economically attainable.

A Smart City comprises of good infrastructure, water availability, waste disposal, transport, energy conservation, providing health facilities and governance with maximum use of technology to enhance transparency, accountability and ease of operation.

Pune is called as the "Oxford of East". It is a major Educational Hub, IT Hub, Manufacturing Hub alongwith Heritage and Cultural Sites. It is abundant with availability of water, agriculture flourishes around its periphery and it has a pleasant climate. In order to encash this resources, we need to make use of technology and logistics, keeping in mind the economic aspect. Pune has IT hubs which provides it with most essential element of human resources

needed to innovate the different ways to make city smart.

With help of ICT(Information and Communication Technology), we can –

- 1) Map Agricultural lands, agricultural output. Provide logistic support for Agricultural Market. Economical use of water, Soil Management with help of Technology. A Farmer can be provided with all these services through Gram Panchayats Information Center.
- 2) Transport are blood veins in the city. It not only provides ease of travel but also brings economic prosperity and investment to city. Roadways, Railways need to be nested in such a way that both provide economic opportunities and public transport ease. The public transport needs to be secure, fast and reliable with almost all the remote corners connected to each other.
- 3) Water is essential component not only for human but also the other creatures around us. Water Management has become a Need of Hour. Industries should mandatorily have Water Treatment Plant. The Fertilizer, Pesticides and detergent water which enter river lead to

Water Hyacinth, which needs to be stopped. The BOD(Biological Oxygen Demand) of water need to be maintained for aquatic life in river. Water treatment Plant along with Nano - Technology should be build to provide pure water to household. Water resources can also be cleaned up by nano technology which help to avoid disease like malaria, dengue. The Water Logging in farm and also around residential areas should be avoided by proper drainage system.

- 4) Waste Disposal is a major problem faced by puneties. There are different types of Wastes: Agricultural Waste, Animal Waste, Industrial Waste, E- Waste, Household Waste consisting of Wet and Dry Waste. Amongst these, except E-Waste all others can be used for energy production like biogas, manure, electricity. E-Waste is not degradable, so we can set a plant where e-waste components can be segregated and recycled and reused. We also can set up grids which connect plant producing bio-fuel energy.
- 5) Traffic Management – With increasing number of vehicles on road it becomes a task to keep

smooth flow of traffic. Proper division of roads into pedestrian walk, cycle path, and other vehicles on road is essential. The ICT can be used to digitize the traffic light management, CCTV cameras can be installed. This will help to maintain orderly flow of vehicles. Ring Roads, Flyovers, Underground Road with good infrastructure can be built in order to reduce traffic on roads.

- 6) Education – We can connect colleges in order to boost information sharing on research which will lead to new ideas and innovation with the availability of Wi-Fi on campuses. With the Help of ICT the talented professors, Research scientists, Industrialists, Entrepreneurs can contact students which will then impart them the opportunity to understand the ongoing progress, the obstacles and which might even lead to collective solution to problem. E- Learning, Digitization of Rural schools should be given more importance.
- 7) In order to rejuvenate our old heritage and culture and let world experience the greatness of our land we need to make our city Tourism friendly. We need to have proper records which could be accessed through net by tourists for different religious places, forts, museums. Eco- friendly zones, the places related to our great leaders or institutions with history to tell about. There need to be proper arrangement of transport, lodging system, information brochures and trained guides. We should also ensure good hospitality which will lead to more flow of tourist. Also provide proper security with inquiry centers at tourist places.
- 8) Other steps like adopting Water Harvesting techniques, Enhancement of Public Transportation, Heritage conservation, Reducing Slum Areas along with Population Control, Entertainment and Recreation should be considered.
- 9) Smart city comprises of Smart citizens. In order to achieve these, Social awareness must be created. There should be discipline. There must be Spiritual awareness amongst the citizens. Hence required Centres must be opened.
- 10) As city will become more Smart, at same time there will be danger to Security of people living in it. Hence

more importance must be given to public and private security also.

If we achieve all these, then there will be increase in revenue and government will be in profit. It will expand the livelihood of people working in informal sector.

Developed Urban Areas will create sustainable economic development, high quality of life excelling in multiple key areas. By adopting Green buildings, banning Deforestation, and giving importance to public transport, pollution can be controlled at a very great extent.

- Snehal Jadhav, T.E

3.BEST PRACTICES IN DEPARTMENT

"The basic objective of the best practices is to make the students employable."

Industry Institute Interaction

1. Expert lecture:

The department regularly organizes the guest/expert lectures of industry persons who are having rich experience in the respective field/ area for every subject. In a year about 20 expert lectures on different topics are arranged/conducted. Apart from this, as and when required more

lectures are arranged. The objectives behind it, are:

To share the experts' industrial practical knowledge. This will help student in their study.

They can change their way of learning. These expert lectures help the students to clear their ideas about the basic concepts.

To provide students and faculty members the opportunity to gain knowledge and insights on various concerns faced by the world today through interactive sessions. It is an excellent opportunity for students to meet with global experts, gain knowledge and build their understanding of key global issues.

2. Industrial visit:

Another aspect of Industry-Institute interaction is industrial visits. Every year department organizes minimum six industrial visit for each class i.e. SE, TE and BE. More than 15 industrial visits are arranged in a year (term-I and term-II). Industrial visits help students to see the implemented technology during the term only. Apart from real time implementation, these visits also help students to get familiar with the industry atmosphere and working culture.

3. Industrial Training/Internship:

As one day visit is not sufficient to learn the technology. Therefore, students of the

department are provided with an opportunity to work in the industry at least one week in both the terms of each year. The aim is to receive practical training under the supervision of trained engineer or technical staff. It helps students to relate engineering concepts to their work during industrial training. Apart from this, it helps to develop/learn different skills like leadership, problem-solving, communication in a work environment, industry culture, working in a team, execution of work in a group, responsibilities according to designation, discipline

4. Sponsored Projects:

The objective for an industry-sponsored project is to create a unique, high-quality educational opportunity for our students. Next to an internship, working with an industry sponsor on a project is perhaps the finest opportunity to experience high-level critique and

interaction that a student can have. There is no better way to prepare these individuals for the professional settings, they will experience once they graduate.

It provides valuable experience for students exploring varied career paths. It allows sponsor liaisons the opportunity to meet our department's brightest, most talented individuals.

5. Technical Notice Board:

One faculty member of the department is the co-ordinator of it. His/her responsibility is to collect one

article from each class student and to be displayed on technical notice board on every Monday to make available for other students to read. The idea behind it, is that, students should read the journals, various books, industrial magazines and other reliable sources also. This enhance the students knowledge on new trends/techniques and innovations coming in industry. Research Papers can also be displayed on technical notice board.

6. Wall Magazines:

Wall magazines help students to show their extracurricular talent like painting, poem, writing skills etc.

Projects:

We believe that implementation of technology enhance the practical skills of students, keeping this view in front, the department has decided the series of projects which are beyond their syllabus. Students have to do these projects during their course (SE to BE) either individual or in a group of 2-3 students. In series of projects, depending upon the subjects learned and learning in the year, students have to undergo through various projects in that academic year. The series of projects are as follows.

1. Component Testing:

The first project assignment is based on the component testing for the second year students. The duration is of one month from the commencement of

term-I. These students are provided with the knowledge of different components required to design any project circuit. It helps students to select the component, its range, type and which component is used in which area.

2. Power Supply Design:

This is a second project assignment in term-I of second year. Power supply is an important part of any project. Through this, students get the knowledge of designing the power supply such as use of required components, selection of components, design of circuit, purchase of components, its cost, and market survey.

3. S.E Mini Projects:

Beyond the second year syllabus students are said to design the mini projects which includes the contents of their second year subjects like Linear Integrated Circuits, Digital

Techniques, Basic Instrumentation, Sensors and Transducers, Signal Conditioning. S.E is having the basic subjects which they need to learn and implement in future. So students are advised to design their projects on bread board using LED and signal conditioning circuit.

4. TE Seminar Projects:

Under the seminar head, department gives projects based on the subjects of third year engineering. It includes embedded systems, programmable logic

controller, digital signal processing, may be on other technology also etc.

5. Workshops/ Seminars for students:

Workshop provides students with new skills, information and a sense of accomplishment. Technical Workshops take the form of presentations enabling attendees to gain hands-on experience of hardware and software. The workshops cover classroom explanations of components, features, engineering, operation, maintenance, performance and testing, providing an opportunity for practical and interactive learning and site tours.

6. Technical Competitions like poster competition, paper presentation, etc

Department offers a variety of competitions, departmentally and locally, to students. These competitions offer students the opportunity to develop professionally and technically. It helps them to change the world by developing a unique solution to a real-world problem using engineering, technology, science, computing, and leadership skills to benefit the community.

7. Social Activity:

Being a citizen of india, we should understand our responsibilities towards our nation. So the department started an activity to help the needed persons or NGO's by donating some amount or conducting some activity for them.

8. NSS Participation:

NSS programmer is organized by the students themselves, and both students and teachers through their combined participation in community service, get a sense of involvement in the tasks of nation building. Here the students and teachers devote some time to voluntary manual work.

9. Soft Skill Activities:

Soft skills is a term relating to a collection of personal, positive attributes and competencies that enhance relationships, job performance, and value to the market. Soft skills play a highly important role in the work place as well as in one's career success. These skills are applicable to every field of work , and are usually behavioral traits inherent in an individual.

Department organizes the soft skill activity for the students where the experts from SEED and industry people came to teach them the different skills.

10. T&P activities:

Placement is a very important part of any college or institute. A very well training and placement activities are conducted by the department as well as institute.

11. Higher education and competitive Exam preparation:

Students are motivated to go for higher education and appear for competitive exams. Its one good result is that one alumni from our department was ranked 2nd in UPSC

Maharashtra state. And now she is in IRS.

12. Entrepreneurship lecture:

Department organises one entrepreneur lecture in every semester. This lecture is taken by the entrepreneur who succeeded in their business carrier and professional life. This lecture helps students in broad understanding of business practices and procedures. This activity intended to foster the entrepreneurial spirit (identifying opportunities, locating funding sources and developing an entrepreneurial mindset).

13. (Beyond Articles/Assignments/Practical's):

To get the students knowledge of new trends/techniques and innovations coming in industry. In this we give students the practical approach of theory by giving assignments, articles and practicals.

14. Educational charts:

Helps students to remind of formulas, basics and diagrams at any time.

15. T.E Seminar:

T.E students

16. Innovative practices:

Schools or teacher education institutions can carry out innovations or experimentation on any aspect of their work related to teaching-learning, training or

management of schools in order to improve efficiency of the institution to overcome problems and difficulties, they face in day to day functioning. Innovative tools like, multimedia learning process, mind map, role-play, Z-A approach etc.

17. Memorandum of understanding(MOU):

Department had signed MOU with 3 big industries like Gyro Automation services, Beck-off Automation and Bio-Kit Mumbai. Each semester we organized the workshops under these MOU's.

18. Professional Bodies Membership and Activities(ISOI, ISA, ISTE):

Students of the department are made compulsory to be a member of any professional bodies. And various activities like workshops, seminars, competitions are conducted under these bodies. These professional bodies helps students in future in their career and research.

19. Departmental Magazines:

Department publish semester wise magazines "Technofiesto". Magazine covers publications, technical and nontechnical articles, events, and major highlights of the department.

20. Newsletter:

Newsletter of the department is published in every

month, which shows the activities and events conducted and organized by the faculties and students as well as their participation in outside events in that month.

21. 5 mins presentation in Class Room:

To enhance the stage daring, the confidence, communication and body language of student, faculty carry out 5 mins presentation of each student in every lecture. Here, student can select any topic of his/her interest and should give 5 minutes of presentation on those topic.

4.DEPARTMENTAL VISITS



← Mrs.S.V.Kulkarni attended the STTP on "Analytical Instrumentation" at COEP, Pune, on 15th-19th June 2015

→ Industrial Visit of S.E students along with Mrs.S.V.Kulkarni at 'MELUX Gears and Control Pvt, Ltd, Pune' for Photonics & Instrumentation Subject on 02/07/15



← .Social visit of S.E students along with Mr.H.P.Chaudhari and Mrs.S.V.Kulkarni at 'Matoshri Vrudhashram', Pune on 28/7/15

→ Industrial Visit of S.E students along with Mrs. S. R. Lahamage and Ms. N. S. Nagdeo at 'Indian Meterological Department, Pune' for Sensors and Transducers Subject on 19/08/15





Industrial visit of B.E Students along with Ms. N. S Nagdeo at ' Ruby Hall, Azad nagar, Wanowari, Pune ' for Advance Biomedical Instrumentation subject on 18/8/15.

- Industrial visit of B.E Students along with Mrs. A.A. Shinde and Mrs. D.U. Shinde at ' Beckhoff Automation Pvt. Ltd, Yerwada, Pune' for Building Automation, Sensor Networks subjects on 24/9/15.
- Industrial visit of T.E Students along with Mrs. S.V. Kulkarni at ' Chemistry Department of Chemistry, SPPU, Pune' for Instrumental Methods for Chemical Analysis subject on 14/9/15.
- Industrial visit of S.E Students along with Mr. H.P. Chaudhari and Mrs. S.V. Kulkarni at ' Electronic Test and Development Centre, Pune ' Basic Instrumentation subject on 16/9/15.
- Social Visit of B.E students at Shri Chattrapati Pratishtan, Niwasi Matimand Vidyalaya, Sinhgad, Pune
- B.E students along with Mrs.D.U.Shinde conducted the social activity on "Social Awareness of wearing Helmet and Save water & trees" on dated 23/07/15

5.EXPERT LECTURES

Expert lecture on "Sample analysis technique by using UV Visible Spectrophotometer atomic absorption spectrometer Photometer " for T.E. students, conducted by Mrs. Aarti Pranjpe, Kulkarni Laboratory, Pune on dated 14/07/15



Expert lecture of Project engineering and management organized by Mrs.G.S.Ingle and conducted by Mr.Ajay Kumar Pandey Manager Projects, Forbes Marshall, Pune on 26/08/15.

Expert lecture on "Optical Components & Optical Instruments " for S.E. students, conducted by Dr. P. O. Borole, Precision Optics & Scientific Instruments, Pune, on 16/07/15.



Expert lecture on " Communication Techniques", on 22/7/15 by Mr.D.J.Joglekar (Project manager), Tetrapack, Pune



Expert Lecture on "Sensors and Transducers" organised by Ms. Shital Lahamage and conducted by Mr. Vishal Lohiya (Marketing Executive – Shree Instruments) on 30/07/2015 for S.E students

Expert lecture on "Industrial Internet On Things (IIOT)" on 30/09/2015 by Mrs. Sujata Tilak, MD & CTO, Ascent Intellimation Pvt. Ltd., Pune Organized by Mr. S.R.Kale Under ISA Student Charter for BE and TE students. (Under ISA student charter)



Expert lecture on "Batch Process and Standards" on 01/10/2015 by Mr. Madhav Kane (CEO), Consulting Process Control Engineers (CPCE), Pune Organized by Mr. S.R.Kale for the subject Process Instrumentation-I for BE students.

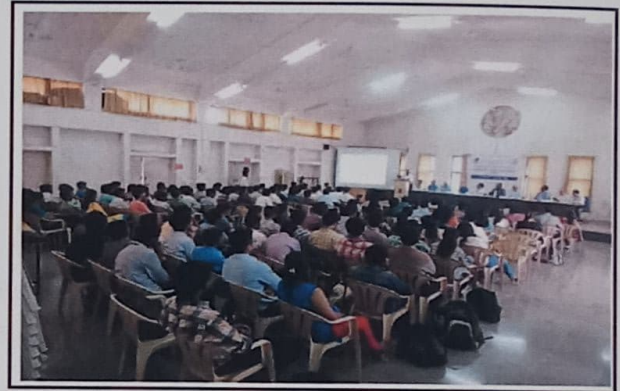
Expert lecture of "Entrepreneurship" by Mr. Waman Sanap, Ipac Automation, Pune for BE. (Instrumentation) students on dated 30/7/15



6.ISA STUDENT CHARTER

(International Society Of Automation)

We are proud to announce that ISA Student Charter was inaugurated at our department on 21/08/15 by ISA President Mr.K. V. Rehani, ISA Vice-President Mr. J. G. Bapat in the presence of ISA members Mr. Ramani Iyer, Mr. Ramachandran and Mr. Vishwas Kale.



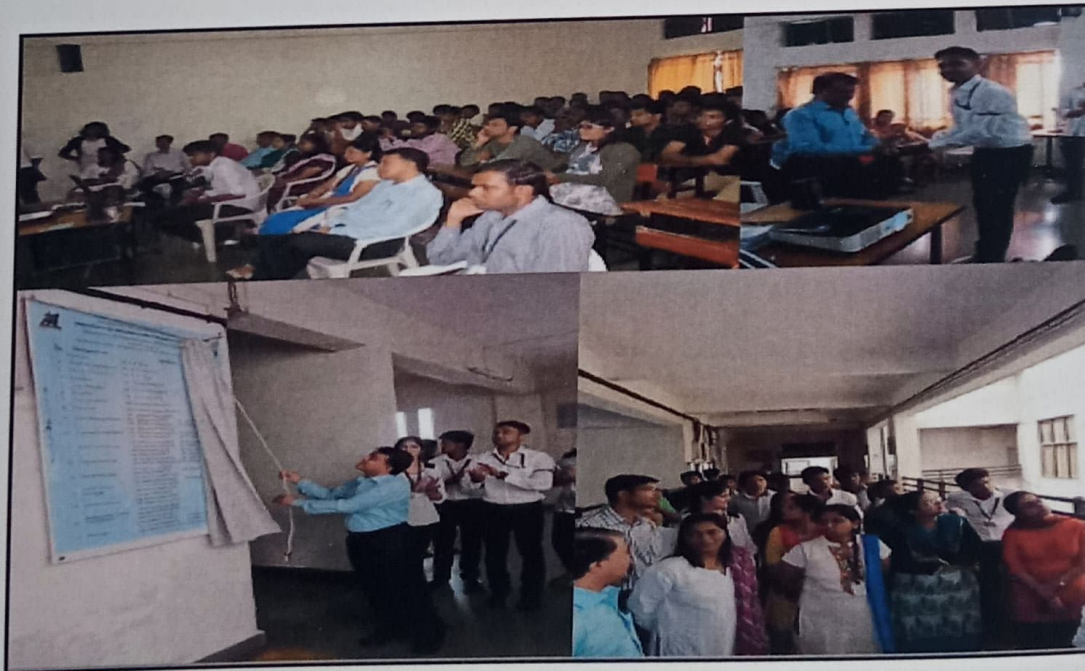
7.INSTRON 2K15



8.STUDENT'S CORNER



- BEST TE GFM for the Academic Year 2014-15- Mr. S. C. Ragade
- BEST T.E. CLASS for the Academic Year 2014-15- T.E. Instrumentation



- Guru Purnima Celebration

9.FACULTY CONTRIBUTION

PUBLICATION

Sr. No	Name of the teacher author	Title of the paper	Name of the journal/ proceeding/ edited books	Volume & pages	Year of publication	ISBN/ ISSN No.
1.	Ms. N.S Nagdeo	Advance Voting Machine With Security Feature		3	2015	2321-8169
2.	Mrs. Shital Lahamge	Study Of Statistical Features of wavelet Coefficient Of Mammograms For Breast Cancer.	(ICRTET 2014) Elsevier Science & Technology Proceeding	6	2014	
3	Mrs. Shital Lahamge	Breast Cancer Classification With Statistical Features Of wavelet Coefficient Of Mammograms.	(IJSERT-2014) 4 th International Journal	Vol-3 Pages-0920-0926	2014	2319-8885
4.						

TEACHING STAFF ACHIEVEMENTS & AWARDS

Sr. No.	Department	Name of Staff	Achievements & Awards
1.	Instrumentation	Mrs. A. A Shinde	BA1(100%Result)
2		Mrs. G.S. Ingle	IA(100%Result)
3.		Ms. D.P. Inamdar	BMI&ABMI(100%Result)
4.		Mrs. P.A.Pande	EI(100%Result)
5.		Mrs.N.B. Mane	PDC&MEMS (100% Result)
6.		Ms. N.S.Nagdeo	IAG(100%Result)
7		Mr. S.C. Rajgade	Best GFM- T.E
		Mr.S.C. Rajgade	Best Class- T.E