

Message from the Secretary

Dear Friends, on the occasion of the 74th Republic Day, I wish warm regards to you all. In this quarter, The Techno-Societal 2022 (4th International Conference on Advanced Technologies for Societal Applications) was organized on 09-10 December, 2022 at SVERI Campus Pandharpur. The conference has offered a multidisciplinary platform for researchers from a broad range of disciplines of Science, Engineering and Technology for reporting innovations at different levels. The conference has also given opportunities to young researchers for presenting their innovative research work for societal applications. The prima-focus of the conference was to motivate researchers for technology evaluation on grass root level.

The Techno-Societal 2022 was inaugurated by Hon. Raghunath Shevgaonkar, Former Director, Indian Institute of Technology Delhi India. The plenary speakers Agus Budiyo, Co-Chairman of Indonesia Center of Technology Empowerment, Indonesia and Prof. J. M. Chandra Kishen, Professor, Department of Civil Engineering, Indian Institute of Science Bangalore, has also enlightened the conference. The keynote addresses from various speakers from India and abroad like Ashok Ranade (Canada), Dhanajaya Tambe (USA), Dr. Botir Usmonov (Uzbekistan), Amit Utkarsh Sinha (USA), Dr. Ajay Kumar Mishra (South Africa), Dr. Venkata Reddy Poluru (UAE), Tithankar Banarjee (Australia), Dr. Neha Biyani (USA), Rajaram Desai (IIT Bombay), Dr. I. Thirunavukkarasu (MIT Karnataka), Dr. Gaurav Bartarya (IIT Bhubaneswar), Dr. Vijay Kumar Pal (IIT Jammu), Dr. Kashfull Orra (IIITDM Kancheepuram), Mr. Pratap Sanap (Neilsoft, Pune), Dr. Sanjay Toshniwal (Principal & Director - Vidarbha Institute of Pharmacy, Washim), Mr. Srinivas Chamrathy (CIE & MD, CYME Automation Systems Pvt. Ltd., Hyderabad) etc. have been delivered.

The 415 abstracts received from the various colleges across India and 375 full length research papers were received. Further, a total number of 463 participants benefited through the international exposure by keynote sessions by international speakers via online mode interaction.

Thank you.

Editorial

I am glad to present before you the quarterly edition of SVERIAN on 74th Republic Day. The quarterly newsletter 'SVERIAN' strives to spread the updates in the field of Science and Technology to the readers. The highlights of activities at institute and department levels have been presented. I hope the readers will get some quality content related to various disciplines of Engineering and Technology.

Thank you.



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Battery Management System in Electric Vehicles

Contributed by: Prof. S.V. Moholkar, Department of Electrical Engineering

In order to ensure the safety of electric vehicles, a Battery Management System (BMS), which controls the electronics of a rechargeable battery, whether a cell or a battery pack, becomes essential? By ensuring that the cell runs within its safe operating limitations, it protects both the user and the battery. BMS tracks the battery's State of Health (SOH), gathers data, manages external elements that impact the cell, and balances them to maintain uniform voltage across cells. A smart battery pack is a battery pack that has a BMS linked to a data bus or an external communication data transmission system. In order to provide details about the battery's power status, and functions like fuel gauge integration, smart bus communication protocols, General Purpose Input Output (GPIO) options, cell balancing, wireless charging, embedded battery chargers, and protection circuitry. The gadget may use this information to intelligently preserve power.

A smart battery pack may control its own charging, produce error reports, detect low charge conditions and alert the device, and forecast how long the battery will survive or how much run-time is left. In order to keep its forecast accuracy high, it continually self-corrects any inaccuracies and also gives data on the cell's current, voltage, and temperature. Smart battery packs often feature incorporated electronics that increase the battery's dependability, safety, longevity, and usefulness. For instance, batteries with inbuilt chargers may have longer life cycles since the chargers optimally and optimally charge the batteries within the permitted temperature ranges. The interface known as GPIO, or general purpose input/output, is used to link microcontrollers and electrical devices like diodes, sensors, displays, and so on.

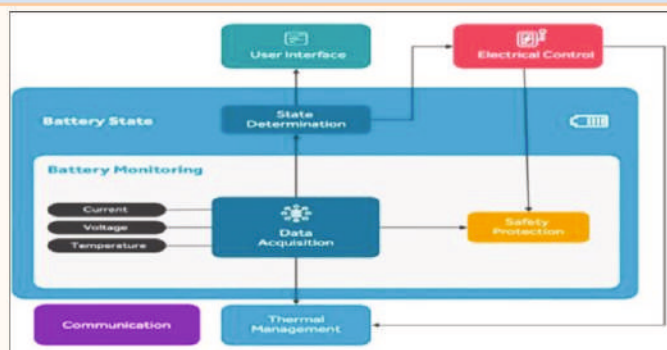


Fig. 1: Typical Battery Management System

6G Mobile Communications Technology

Contributed by: Prof. J. S. Hallur, Department of E & TC Engineering, Dept.

Even before the 5G mobile communications standard was fully deployed, the eyes of many started to turn towards the next generation: the 6G wireless communications system. Although the 5G mobile communications standard is still in the early days of its deployment, ideas are starting to come to the fore to consider what the next generation, i.e. 6G mobile communications. If 6G is to be able to meet the needs of the mobile communications when it is launched and for some while afterwards, then it will need to use up to the minute technology - technology which is not available at the moment. However there has been talk that 5G will be the last mobile standard released as such: this will be updated to provide the required performance improvements and in this way it overcomes the huge investment required to launch a completely new system. If this idea catches hold then 6G will not be named as such, but instead it will be a major improvement in 5G performance to meet the needs of the ongoing mobile communications or wireless communications users. Sixth-generation wireless communications system is the successor to 5G cellular technology. It is anticipated that 6G networks will be able to use higher frequencies than 5G networks and this will enable higher data rates to be achieved and for the 6G network to have a much greater overall capacity. 6G mobile

technology will be to support one micro-second or even sub-microsecond latency communications, making communications almost instantaneous.



Fig. 2: Necessary Foundations & Associated Analytical Tool for 6G

Flight Ticket Reservation Application Using Java

Contributed by: Prof. A. A. Garad, Department of E&TC Engineering

We have developed a Flight Reservation System on JAVA Spring Boot, My SQL, which runs on the Tomcat Server and STS IDE, we have used Spring Tool Suite (STS) IDE. JAVA Spring Boot project on Flight Reservation System is developed for automating the process of Flight Reservation System.

The main features and modules developed in project is User Module, Flight Module, Passenger Module, Reservation Module, which perform all the various operation. Spring Boot project on Flight Reservation System is secured web application which run inside JVM.

In this project first up all I am creating User Module which creates account of User then by using the information of User like Email Id and Password, User will login and goes on Flight Booking Page that is in this User will enter Departure City, Arrival City and Date and then after this User will goes on showing of Flight details after selecting Flight goes on Passenger Module, in that module enter all the details of passenger then another team working on payment gateway and then finally using API(Application Programming Interface) that is itextPDF, User get tickets in the form on PDF.



Fig. 3: Airline Reservation System (using Java)

Front End: JAVA Spring Boot
Back End: MySQL.

Employee Retention and its Importance

Contributed by: Prof. Amad A. Ahmed Department of MBA

Employee retention is the goal of every organization for keeping productive and talented employees and reducing turnover by creating a positive working atmosphere to promote employee engagement, showing appreciation to employees, providing competitive pay and benefits, providing leadership opportunities and encouraging a healthy work-life balance. Employers are only interested in retaining employees during periods of low unemployment and heightened competition for talent. For retention of the employees, organizations use numerous human resources technology for recruiting, on boarding, engaging and recognizing workers, as well as offering more work flexibility and modern benefits like physical and financial wellness programs. When an Employee feels the policies and practices of the organization is aligned with the goals and objectives of the themselves then usually the retention in organization is very less. It also depends on the various policies and practices of the organization which let the employees stick to an organization for a longer span of time. Job satisfaction & employee engagement are key components of employee retention.

Hiring is a complex process:

Recruiting is a more complex activity or process than most managers think it is. It not only just involve curating advertisements or approaching employment agencies. For one thing, your recruitment efforts should make sense in terms of your company's strategic plans. For example, decisions to expand abroad or to fill a large number of anticipated openings shows that you've carefully thought when and how you will carry out your recruitment process. Secondly, some recruiting methods are superior to others, depending on the type of job you are recruiting for and what your resources are.

Lot of time and money required in grooming:

Irrespective of gender, self presentation is extremely important and equally necessary for working professionals. Employees in many organizations, companies and any other work places make regular transactions and contacts with a large number of groups like employers, colleagues, clients, business partners and customers. Today, in this competitive business scenario, people have a great liking to visit organizations which are nicely arranged along with a pleasant looking set of employees. In order to achieve goals of an organization, employees need pleasing personality, in addition to educational qualifications and skill set. For any kind of employment whether service or a business, the individual, male or female, should be appropriately groomed.

Pushing thermoelectric generators toward energy harvesting from the human body: Challenges and strategies

Contributed by: Prof. Digambar T. Kashid, Department of Mechanical Engineering

Advances in miniaturized portable electronics and progress on novel enabling technologies, consequently accompanied by power consumption downgraded from the scale of milliwatts (mW) to microwatts (μ W), have inevitably facilitate the development of an emerging discipline-wearable human energy conversion systems. Served as a passive human energy harvester which can directly convert heat into electricity in long-term operations without the user's intervention, wearable thermoelectric generators (WTEG) have sparked considerable research interest for next-generation power supply. In comparison to the longstanding research history of thermoelectrics, their wearables are still in infancy of extensive growth over the last decade.

Although, historically, the main challenge behind the conventional thermoelectric generator (TEG) is the improvement of dimensionless figure-of-merit (zT), wearable applications usually impose additional restrictions that can be more pivotal than zT value. Diversified targeted strategies therefore have been proposed to push TEG toward wearable application. Here, we review the evolutionary roadmap of the wearable thermoelectric generators in the past decade, it could be concluded that the trend in WTEG is to move toward stretchable three-dimension (3D)-structure with rational thermal design at the moment. The basic concept targeting WTEG, which highly differs from that of the traditional TEG, is introduced at first. And then, the specific

strategies targeted WTEG that is classified into thermal design regarding extrinsic temperature difference (ΔT_{ext}), parasitic and TEG thermal resistance, mechanical design with emphasis on optimizing deformability at materials/device level beyond flexibility toward stretchability, as well as architecture design from two-dimension (2D) to 3D feature are comprehensively summarized, respectively. With these understandings, perspectives for the future development of WTEG are outlined. This review emphasizes issues and provides additional insight in advanced strategies for pushing TEG toward wearable application.

Billion Hyper-Associated Individuals

Contributed by: Prof. T. H. Dethe, Department of Computer Science Engineering

Facebook (Internet.org), Space X, Google (Undertaking Crackpot), Qualcomm, and Virgin (One Web) are intending to give worldwide availability to each human on Earth at speeds surpassing one megabit each second. We will develop from three to eight billion associated people, adding five billion new shoppers to the worldwide economy. They address several trillions of new dollars streaming into the worldwide economy. What's more, they are not coming internet based as we completed a long time back with a 9600 modem on AOL. They're coming on the web with a 1 Mbps association and

admittance to the world's data on Google, cloud 3D printing, Amazon Web Administrations, man-made consciousness with Watson, crowd funding, and publicly supporting, and that's just the beginning.

Unpredictable business sectors worldwide and between modern organizations are establishing a drastically more unique market climate which calls for impressively more noteworthy on-request adaptability in asset sending. The present organizations need to answer advancing patterns. As well as expanding adaptability, this additionally implies making a move in two further

regions, specifically expanding changeability and answering segment change. Besides the worldwide change towards a completely organized society is in the works, in Germany, in Europe, and obviously in the US - pretty much everywhere. In this setting, one huge subject is the "Web of things and administrations". Computerized change changes business and confidential life in like manner - in a fundamentally and supportable way. The monetary potential is gigantic.



Fig. 4: Billion Hyper

Effect of Utilisation of Waste Plastic Bottles on Compressive Strength of Concrete

Contributed by: Prof. M. G. Deshmukh, Department of Civil Engineering

Normal concrete block is made up of materials such as cement, sand, coarse aggregate and fine aggregate. Concrete is heterogeneous materials and used for the construction of the most of the elements of the civil engineering structures. Concrete cubes are the platforms to check the compressive strength of the concrete. Compressive strength of the concrete has greater impact on the design of various RCC elements. Hence, it is necessary to improve the compressive strength of the concrete. Concrete with normal materials such as cement, coarse aggregate, fine aggregate and water has greater impact on the compressive strength and gives good compressive strength values. There is greater impact of various recycled materials such as plastic bags on the compressive strength of the concrete. Recycled materials with good plastic properties has greater impact on the compressive strength of the

concrete. Hence, in this study, plastic bag is used as the one of the material along with conventional concrete materials and compressive strength of the concrete is measured at 7 days, 14 days and 28 days respectively. It is found that there is considerable increase in the compressive strength of concrete with inclusion of plastic materials. It is also statistically proved that there is significant increase in the compressive strength of concrete with plastic bag as waste materials with respect to concrete block with normal materials. General regression modelling is also done to check influence of plastic material on the compressive strength of concrete. Regression model is calibrated with good R-square value and it is found that there is increase in the compressive strength of concrete with inclusion of plastic bags. Methodology of the section are as follows:

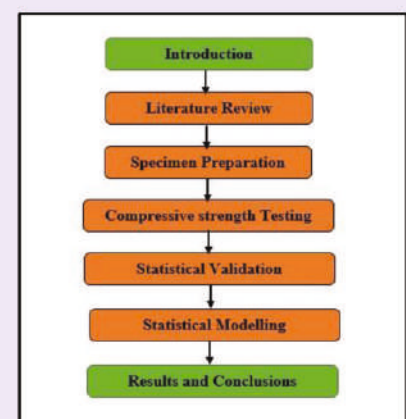


Fig. 5: Methodology of a Section

Institute and Department Level Activities and Achievements

SVERI's College of Engineering, Pandharpur

|| Excellent Research ||

RGSTC has sanctioned

Rs. 33.73 Cr. Fund for Research on Drone

to

IIT Mumbai, VJTI Mumbai & SVERI Pandharpur!



Research Grand Rs. 33.73 Corers Sanctioned from RGSTC with collaboration of IIT Mumbai & VJTI Mumbai for Drone Project



Techno-Societal – 2022: International Conference on Advance technologies for Societal Applications Inauguration in SVERI



Mock Parliament activity - Department of Electronics and Tele-Communication Engineering



Completed PhD
in
Civil Engineering



Dr. Sonali Pandurang Patil

Expert talk Activity - Department of Civil Engineering