Sanjivani College Of Engineering

Department Of Electrical Engineering

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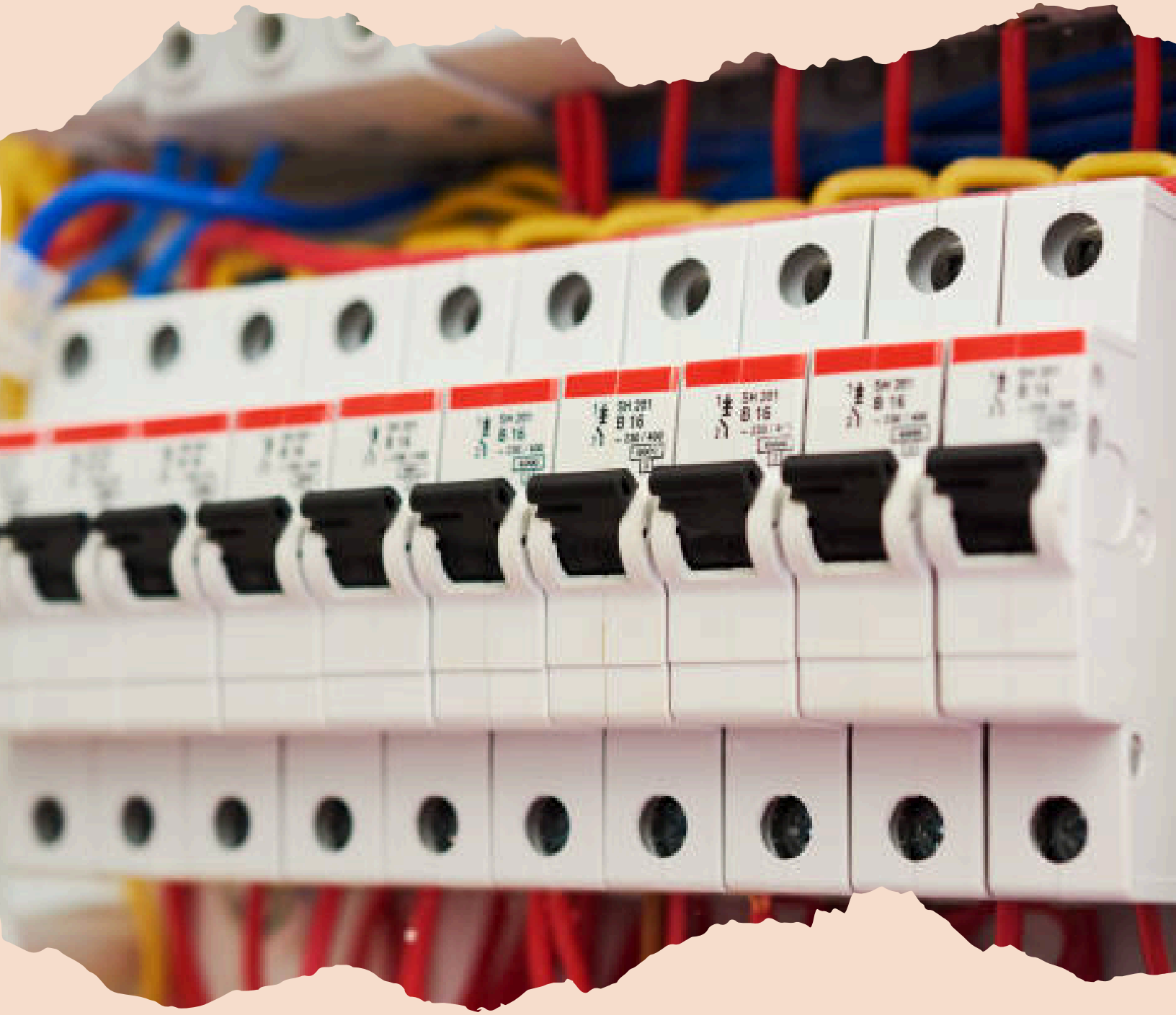


MISSION

- M1: TO IMPART QUALITY EDUCATION THROUGH TEACHING LEARNING PROCESS.
- M2: TO ESTABLISH WELL-EQUIPPED LABORATORIES TO DEVELOP R&D CULTURE IN CONTEMPORARY AND SUSTAINABLE TECHNOLOGIES IN ELECTRICAL ENGINEERING.
- M3: TO PRODUCE ELECTRICAL ENGINEERING GRADUATES WITH QUEST FOR EXCELLENCE, ENTHUSIASM FOR CONTINUOUS LEARNING, ETHICAL BEHAVIOR, INTEGRITY AND NURTURE LEADERSHIP

VISION

TO PRODUCE QUALITY ELECTRICAL ENGINEERS WITH THE KNOWLEDGE OF LATEST TRENDS, RESEARCH TECHNOLOGIES TO MEET THE DEVELOPING NEEDS OF INDUSTRY & SOCIETY

MEET OUR STAFF

DR. D.B. PARDESHI
Professor and HOD

DR. G.VIJAYAKUMAR
Professor

DR. M.SUJITH
Assistant Professor

PROF.P.V. THOKAL
Assistant Professor

PROF.R.N.HAJARE
Assistant Professor

PROF.A.M.DEULKAR
Assistant Professor

PROF.R.R.BIBAVE
Assistant Professor

PROF.S.S.GONDKAR
Assistant Professor

PROF.D.A.NARAYANE
Assistant Professor

PROF.M.R.GUNJAL
Assistant Professor

PROF.R.S.RASAL
Assistant Professor

PROF.P.S.KURHE
Assistant Professor

PROF.A.S.PANDE
Assistant Professor

PROF.S.R.MAURYA
Assistant Professor

PROF.P.S.CHOBE
Assistant Professor

PROF.D.BHOWMICK
Assistant Professor

PROF.S.K.AGRAWAL
Assistant Professor

FROM THE HOD DESK

As the head of the department, I am thrilled to share that our team is dedicated to enriching the student experience through a diverse array of events each year. Our department is committed to fostering a vibrant and engaging academic environment, and we achieve this by organizing a wide range of activities designed to complement the classroom experience. Throughout the year, we host events that cater to various interests and academic disciplines, from workshops and seminars to conferences and networking opportunities. These events are crafted to provide students with valuable learning experiences, practical skills, and opportunities to connect with industry professionals and peers. Additionally, we organize social events and extracurricular activities that help students build a sense of community and balance their academic and personal lives. Our goal is to create an environment where students can thrive both academically and personally, and these events play a crucial role in achieving that aim. By continuously assessing and adapting our event offerings, we strive to ensure that they remain relevant, impactful, and aligned with the evolving needs and interests of our student body.

FROM THE EDITORIAL DESK

I am excited to announce that we are dedicated to enhancing the student experience through a wide range of events organized throughout the year. Our department focuses on creating a dynamic and engaging academic environment by offering an assortment of activities that extend beyond traditional classroom learning. Each year, we coordinate events that address various interests and academic fields, including workshops, seminars, conferences, and networking sessions. These initiatives are designed to provide students with practical skills, valuable insights, and opportunities to connect with industry professionals and fellow students. In addition to academic-focused events, we also host social and extracurricular activities aimed at fostering community spirit and helping students manage their academic and personal lives. Our commitment is to support students in both their educational and personal development. By continuously evaluating and refining our event programming, we ensure that our offerings remain relevant, impactful, and in tune with the evolving needs and interests of our student body.

List of Publications

International Conference (Scopus)

1. Dhanshri Narayane, Amarjeet S Pandey, D.B.Pardeshi, Renuka Rasa1, “Demand Side Management for Commercial Area Using Teaching Learning Based Optimization” PP. 923 – 930, Advances in Parallel Computing, Recent Trends in Intensive Computing , IoS Press (Book Chapter) 2021 1st International Conference on Recent Trends in Computing (ICRTC 2021).

2. Dipesh B. Pardeshi, Anupama Deshpande & Sachin V. Chaudhari, “Load Flow Analysis of 6 MW Biomass Power Plant” Presented paper in Information and Communication Technology for Competitive Strategies, Published in Lecture Notes in Networks and Systems July 2021.

3. Chandramouli A, Arulmurugan R and Siva C, “Review of Performance Improvement of VSS FLC and NN MPPT Photo Voltaic Power System” PP. 84 - 89, Advances in Parallel Computing, Recent Trends in Intensive Computing , IoS Press (Book Chapter) 2021 1st International Conference on Recent Trends in Computing (ICRTC 2021).

International Conference (Non-Scopus)

1. Pardeshi, Dipesh and Deshpande, Dr. Anupama, Possible Modeling of Small Biomass Power Plant (June 26, 2020). Proceedings of the International Conference on Recent Advances in Computational Techniques (IC-RACT) 2020, Available at SSRN: https://ssrn.com/abstract=3683050 or http://dx.doi.org/10.2139/ssrn.3683050 .

2. D.B.Pardeshi, A.Deshpande, “ Modelling of 6MW Biomass power plant using agro waste, Published by Shri Jagdish Prasad Jhabarmal Tibrewala University, Jhunjhunu, Rajasthan.

3. A.S.Pandey, Harpreet Singh, “Design & employment of HEV”, proceedings of international conference on research challenges to multi-disciplinary innovations, pp.1-8, 2020. ISBN 978-93-5268-757-2

International Journal (Non-Scopus)

1. Dipesh B. Pardeshi, Anupama Deshpande, “Power System Analysis Of A Biomass Power Plant ”, IJAST, vol. 29, no. 8s, pp. 3968 - 3979, Apr. 2020.

2. Dipesh B. Pardeshi, Anupama Deshpande , “ETAP Based Power System Analysis of a 6 MW Biomass Power Plant” International Journal of Recent Technology and Engineering (IJRTE) , Volume-9 Issue-2, pp.799-84, July 2020. ISSN: 2277-3878 (Online).

3. R. Arulmurugan, "Optimization of Perturb and Observe Based Fuzzy Logic MPPT Controller for Independent PV Solar System," WSEAS Transactions on Systems, vol. 19, pp. 159-167, 2020

4. Arulmurugan R, “Design of automatic moving wheelchair for physically challenged and patient in hospital”, Int Rob Auto J . 2020;6(4):161-163. DOI: 10.15406/iratj.2020.06.00215

5. R. Arulmurugan, Nikam Tanuja Sahebrao, “Design of Robot Car Controlled by Bluetooth Device”, Journal of Controller and Converters, vol.5, No.3, 2020. http://matjournals.in/index.php/JoCC/article/view/6100

6. R. Arulmurugan, Gosavi Shital Vinayak, “A Smart and Eco-Friendly Overhead Tank Water Management System Based on 555 Timer”, Journal of Instrumentation and Innovation Sciences (e-ISSN: 2456-9860), vol.5, No.3,2020 http://matjournals.in/index.php/JoIIS/article/view/6095

7. Arumuruganl R, Dhumane Rushikesh Anil, “Study Analysis of Schmitt Trigger Operational Amplifier”, Journal of Control and Instrumentation Engineering (e-ISSN: 2582-3000), vol.6, no.3, 2020 http://matjournals.in/index.php/JOCIE/article/view/6093

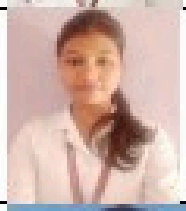
8. Shubham Vijay Halwai, R. Arulmurugan, “Triangular Wave Generator using Integrator and Square Waveform Generator”, Journal of Advances in Electrical Devices, vol.5, no.3,2020 http://matjournals.in/index.php/JoAED/article/view/6103

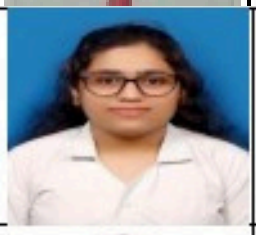
9. R. Arulmurugan, Suhas Bathuwell Pagare, “A Virtual Laboratory for 555 Timer Circuit Investigation Approach”, Journal of Controller and Converters, vol.5, no.3, 2020 http://matjournals.in/index.php/JoCC/article/view/6120

10. R. Arulmurugan, Mahesh Raktat, “Performance Study of 555 Timer using Online Software Tool”,Journal of Instrumentation and Innovation Sciences (e-ISSN: 2456-9860), vol.5, no.3, 2020 http://matjournals.in/index.php/JoIIS/article/view/6101

Placement Record, 2020-21

Sr No	Name Of Student	Photo Of The Student	Name Of Company With Location	Selection For The Post	Pay Scale / Ctc In Lpa
1	Priyanka Chandar		Tcs -Pan India	Jr.Developer	3.5 Lpa
2.	Rohit Boob		Tcs -Pan India	Jr.Developer	3.5 Lpa
3.	Shubham Gadekar		Tcs -Pan India	Jr.Developer	3.5 Lpa
4.	Sanket V. Walzade		Tcs-Sap	Assistant System Engg.-Trainee	3.36 Lpa
5	Bhagvan A. Shinde		Tcs-Sap	Assistant System Engg.-Trainee	3.36 Lpa
6.	Bhagvan A. Shinde		Cognizant-Sap	Associate Sap Consultant	4.00 Lpa
7.	Thoke Ojaswini Sandip		Face Prep.	Placement Mentor	3.06 Lpa

8.	Ushir Shubham Laxman		Wipro	Project Engineer	3.50 Lpa
9	Aniket M Gaikwad		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
10	Vaibhav N Chavan		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
11	Vaibhav G Roham		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
12	Rohini G Bachkar		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
13	Gaikwad Komal		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
14	Salve Nandini Balnath		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
15	Kadam Gauri Rajendra		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
16	Mandude Sachin Balasaheb		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa

17	Tambe Shubham Gokul		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
18	Wagh Dhanashree Chandrakant		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
19	Wagh Vishal Ramesh		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
20	Vaibhav N Chavan		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
21	Khodape Pramod Anil		Dhoot Transmission Pvt.Ltd	Trainee Engineer	1.4lpa
22	Moin A Sayyad		Capgemini	Trainee Engineer	3.8 Lpa
23	Wable Sachin Madhukar		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
24	Patil Sagar Sanjay		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa

25	Yogesh Mhaske		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
26	Ghagare Anil Ramesh		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
27	Kankate Rushikesh Rajendra		Epitome Components Pvt Ltd	Trainee Engineer	1.4lpa
28	Singar Pragati Vijay		Rak Softtech-Sap	Associate Consultant	2.5 Lpa
29	Singar Pragati Vijay		Highbar Technocrat Ltd	Associate Consultant	3.3 Lpa
30	Gaikwad Komal Haushiram		Aakit Solutions	Sap Trainee	3 Lpa
31	Wagh Dhanashree Chandrakant		Wipro	*	*

32	Sachin Madhukar Wable		Wipro	*	*
33	Hrushikesh Dattatray Kote		Wipro	*	*
34	Akash Arun Tupe		Mphasis	Trainee Associate Software Engineer	2.5 Lpa
35	Sachin Madhukar Wable		Infosys-Sap	Abap Consultant	3.6 Lpa
36	Hrushikesh Dattatray Kote		Lumen Technologies	Abap Consultant	5.5 Lpa
37	Hrushikesh Dattatray Kote		Krypt	Abap Consultant	3.5 Lpa

38	Hrushikesh Dattatray Kote		Cognizant-Sap	Associate Sap Consultant	4.00 Lpa
39	Hrushikesh Dattatray Kote		Cognizant	Genc - Developer	4.00 Lpa
40	Rafik Sayyad		Cognizant	Genc - Developer	4.00 Lpa
41	Pratiksha Mokal		Cognizant	Genc - Developer	4.00 Lpa
42	Mahesh Shinde		Cognizant	Genc - Developer	4.00 Lpa
43	Thoke Ojaswini Sandip		Wipro	Project Engineer	3.5 Lpa

44	Rafik Sayyad		Tcs	Assistant System Engineer-Trainee	3.3 Lpa
45	Ganesh Rangnath Jadhav		Wipro	Project Engineer	3.5 Lpa
46	Ganesh Rangnath Jadhav		Tcs	Assistant System Engineer-Trainee	3.3 Lpa
47	Rafik Sayyad		Wipro	Project Engineer	3.5 Lpa
48	Ganesh Rangnath Jadhav		Cognizant		4.5 Lpa
49	Moin A Sayyad		Cognizant		4.5 Lpa
50	Snehal Gaikwad		Cognizant	Pragram Analyst Trainee	4.5 Lpa

51	Akash Arun Tupe		Wipro	Project Engineer	3.5 Lpa-
52	Janardan Jundhare		Infosys	Systems Engineer	3 Lpa
53	Bachkar Rohini		Infosys	Systems Engineer	3 Lpa
54	Wagh Dhanashree Chandrakant		Infosys	Systems Engineer	3.6
55	Wagh Dhanashree Chandrakant		Accenture		4.5
56	Wagh Dhanashree Chandrakant		Tech Mahindra		3.5
57	Shreyas Ravindra Gosavi		Infosys	Systems Engineer Trainee	3

58	Vaishnavi Govind Achari		Wipro-Sap	Project Engineer	3
59	Patil Sagar Sanjay		Tata Technologies	Graduate Engineer Trainee	4.65 Lpa
60	Khairnar Archana Keshav		Wipro	Project Engineer	3 Lpa
61	Bhalekar Abhishek Namdeo		Atos Syntel		
62	Mulay Satyam Uttam		Capgemini	Analyst And A4	3 Lpa
63	Mhaske Sainath Rajendra		Carigar Power Tools	Bdm	4.25 Lpa
64	Mhaske Sainath Rajendra		Tcs	Assistant System Engineer-Trainee	3.36 Lpa

65	Bhalekar Abhishek Namdeo		Wipro	Project Engineer	3 Lpa
66	Akshay Bairagi		Highbar Technocrats	Associate Consultant	3 Lpa
67	Tambe Shubham Gokul		Tcs	Trainee Engineer	3.36 Lpa
68	Tambe Shubham Gokul		Wipro	Trainee Engineer	3 Lpa
69	Wagh Vishal Ramesh		Tcs	Trainee Engineer	3.36 Lpa
70	Wagh Vishal Ramesh		Capgemini	Trainee Engineer	3 Lpa
71	Ghagare Anil Ramesh		Cognizant	Trainee Engineer	Lpa

72	Mhaske Sainath Rajendra		Infosys	Bdm	4.25 Lpa
73	Kadam Gauri Rajendra		Hcl	Project Engineer	3.65 Lpa

Entrepreneurship Record, 2020-2021

Sr No	Name of Student	Photo of the student	Pass out year	Mobile No.	Email ID	Type of Business/ Firm	Remark
1	MATHARU HARPREETSINGH G.		Third year Pursuing (TE)	7666695700	matharuharpreet08@gmail.com	MSME (ELEPRO)	Production of E-Bikes
2.	CHAVAN SWAMIRAJ BHAGWAN		Second Year Pursuing (SY-BTECH)Autonomy	8888782908	Swamirajchavan11@gmail.com	Digital Marketer, Web Developer	INSTAGRAM Sensation with millions of visitors, You Tuber with Over 25K+ subscribers, blogger
3.	SHUBHAM BABASAHEB MADKE		Second Year Pursuing (SY-BTECH)Autonomy	8805566365	Shubhammadke1107@gmail.com	Manufacturing LED by Assembling (INCIDENTLED) MB Group of Industries	9Watt –LED SHOP Act Liscence

Internship Summary 2020-2021

Sr No	Name of Company/Industry	Address of Company/Industry	Name of Student	Class	Div.	Duration (Start Date to End Date)	Remark (Online)
1	marathon Advisory Services Private Limited	Scholiverse Educare Pvt. Ltd. B-610, Unitech Business Zone, Nirvana Country, South City 2, Gurgaon, India – 122018	Miss. Komal Gaikwad	BE	Nil	15/06/2020 – 30/06/2020	Paid Internship – 2000/- stipend
2	NAYA SAVERA	NAYA SAVERA NGO	Miss. Komal Gaikwad	BE	Nil	11/08/2020-26/08/2020	Unpaid
3	Galaxy Production Hamari Pehchan.org	Mahipaipur Baipass Road, New Delhi -110037	Miss. Komal Gaikwad	BE	Nil	19/06/2020-18/07/2020	Unpaid
4	Root Force Marketer	Root Force Marketer. Awing , UniSoft Business Zone, Bombay	Mr. Shubham Ushir	BE	Nil	28/12/2020	Paid Internship – 8000/- stipend
5	Cognizance IIT Roorkee	IIT Roorkee Campus	Harpreet Singh Matharu	TE	Nil	22/2/2021	Performance Based Perk
6	AAKAAR, IIT Bombay	IIT Bombay Campus	Harpreet Singh Matharu	TE	Nil		Performance Based Perk
7	ESUMMIT-IIT Bhubaneswar	IIT Bhubaneswar Campus	Akib Ali Batt	TE	Nil	22/2/2021	Performance Based Perk
8	TAG MANGO WIBE	MUMBAI	Swamiraj Chauhan	S Y B.Tech	Nil	01/04/2021-15/04/2021	Paid Internship
9.	Xen-stack Solutions India Private Limited	S.NO. 162/4B/1, 302, "Lotus Siddhi", D.P. Road, Aundh – 411007	Pratiksha Mokal	BE		07/09/2020-05/04/2021	Virtual
10	PANTECH PROLABS PVT.LTD	ONLINE	RUTUJA BRAHMANKAR	TE		22/11/2020-23/11/2020	Virtual
11	PSSDC-PANTECH PROLABS PVT.LTD	ONLINE	RUTUJA BRAHMANKAR	TE		22/11/2020-23/11/2020	Virtual
12	SNAPDEAL	ONLINE	Nikhil Borawake	TE		12/05/2021	Performance Based Perk
13	Lead & Sales	ONLINE	Nikhil Borawake	TE		16/05/2021	Paid Internshi1 500/-
14	The Entrepreneurship Network	ONLINE	Kunal Gade	S Y B.Tech		01/04/2021 to 01/06/2021	Virtual
15	LUDIFU	ONLINE	Kunal Gade	S Y B.Tech		01/04/2021 to 31/05/2021	Virtual

TECHNICAL ARTICLES

3G – THIRD GENERATION

Def: 3G is the third generation of wireless technologies. It comes with enhancements over previous wireless technologies, like high-speed transmission, advanced multimedia access and global roaming. 3G is mostly used with mobile phones and handsets as a means to connect the phone to the Internet or other IP networks in order to make voice and video calls, to download and upload data and to surf the net. How is 3G Better?: 3G has the following enhancements over 2.5G and previous networks: Several times higher data speed, Enhanced audio and video streaming, Video-conferencing support, Web and WAP browsing at higher speeds, IPTV (TV through the Internet) support. 3G Technical Specifications: The transfer rate for 3G networks is between 128 and 144 kbps (kilobits per second) for devices that are moving fast and 384 kbps for slow ones(like for pedestrians). For fixed wireless LANs, the speed goes beyond 2 Mbps. 3G is a set of technologies and standards that include W-CDMA, WLAN and cellular radio, among others.
where the name 3G phone comes from - a phone that has 3G functionality; nothing to do with the number of cameras or the memory it has. An example is the iPhone 3G. 3G phones commonly have two cameras since the technology allows the user to have video calls, for which a user-facing camera is required for capturing him/her. Your device is connected to the 3G network through its SIM card or its 3G data card which are both generally provided/sold by the service provider. Through that, you get connected to the Internet whenever you are within a 3G network. Even if you are not in one, you can still use 2G or 2.5G services provided by the service provider. 3G and Voice: Wireless technologies are a way for mobile users to make free or cheap calls worldwide and save a lot of money due to the latest telephony applications and services. 3G networks have the advantage of being available on the move, unlike Wi-Fi, which is limited to a few meters around the emitting router.

-Sakshi Shelar
S.Y. B.tech

TECHNICAL ARTICLES

MAKE YOURSELF A SIMPLE 12 VOLT DAY NIGHT SWITCH

Today at times we find the street lights kept switched ON even during broad light and clearly shows how irresponsible the men are. So instead of depending on these officials, why not take the help of electronics and find a solution to get the work done automatically? A simple circuit of an automatic night light described in this article can very accurately switch ON a load (street lights for example) when darkness falls and switch it OFF when dawn breaks. How does the Circuit Functions? A single NAND gate, a PNP transistor and few other passive components are the only things needed to construct this useful gadget. A single NAND gate N1 from the IC 4093 is configured as an inverter and a voltage monitor. A reference voltage can be set at its input with the help of VR1. This adjustment will set the level of darkness at which the system will change state. A LDR (Light Dependant Resistor) which is also connected at the input of N1 is used to sense a difference in light levels. A LDR is in fact a resistor which changes its value with a change in the intensity of light falling on it. In the absence of light or when its dark, the LDR offers an infinite resistance and thus the input of N1 is kept at logic high due to the voltage received through VR1

This means that at this instant the output of N1 is logic low, the relay is activated through T1 and the lights (load) connected to the relay contacts are switched ON. With an increase in the ambient light the resistance of the LDR will gradually fall and after a certain level the input of N1 will become logic low. Immediately its output will go high switching OFF the transistor, the relay and the lights. Capacitor C1 has been kept to avoid the relay from chattering during twilight threshold levels. How to Build And Install The Unit? The entire circuit of this 12 volt day night switch can be built over a small piece of general PCB. Only the LDR has to be fixed over the box so that it can sense the ambient daylight. Take due care to position the LDR in such way that no other stray light or the light which it's controlling is able to be incident on it, or else it may produce false switching and may start oscillating. The best position would be to install the unit at a point much higher than the lights which are controlled by it. This automatic night light system may also be appropriately used to control building porch lights, neon signs, large advertising displays, gallery lights and also as automatic house interior decorative lights. Thus this simple inexpensive circuit will result in quite an economical way of using them.

-Ishwar Navle

S.Y. B.tech

TECHNICAL ARTICLES

BROADBAND SATELLITE FOR ENTERPRISES

The satellite communication is mature and stable one. New technology from i Direct has had the effect of upgrading performance in a manner that is similar to the upgrade from a Ethernet hub to a switch resulting in a solution that provides enterprise class quality and reliability. i Direct provides bi-directional TCP acceralation built into the satellite router and hub equipment at both the remote site and teleport hub equipment .Further , the data transmission is tracked and buffered and occasional acknowledgements are sent end-to –end so that if an error occur does ,only the corrupted portion need be retransmitted. i Direct is the first satellite provide to implement this new technology in their product, and the only one(at this time) to utilize it in both directions. The i Direct solution addresses rain fade in two ways ; first in all , the use of TPC technology means that significantly less power is required to deliver the same band with as a legacy system using RSV secondly , the i Direct solution incorporates automatic power is required to control that automatically boosts transmit power as the signal degrades due to inclement weather . the additional power margin provide by TPC forward error correction can be used to boost the signal without exceeding the power limits imposed by the satellite vendor on their transponder the hub equipment located at the teleport constantly monitors the signal from each remote site . As bad weather moves into a particular area , the remotes VSAT(s) in that area are remotely and automatically commanded to boost their transmission power. As the weather clear, the transmission power is throttled back.

There is a ubiquitous, affordable, high – speed service that allows companies to network all of their remote site at bandwidth speed that support new business application including VoIP and video /IP. This service overcome the limitations and liabilities of older legacy technology and provides reliable, affordable and secure high-speed service designed to support mission –critical application for enterprise custom

-Roshan
Chopda
S.Y. B.tech

TECHNICAL ARTICLES

10 WAYS TO GO GREEN AND SAVE GREEN

How can we live lightly on the Earth and save money at the same time? Staff members at the Worldwatch Institute, a global environmental organization, share ideas on how to GO GREEN and SAVE GREEN at home and at work. Climate change is in the news. It seems like everyone's "going green." We're glad you want to take action, too. Luckily, many of the steps we can take to stop climate change can make our lives better. Our grandchildren-and their children-will thank us for living more sustainably. Let's start now. 1)Save energy to save money. Set your thermostat a few degrees lower in the winter and a few degrees higher in the summer to save on heating and cooling costs.Install compact fluorescent light bulbs (CFLs) when your older incandescent bulbs burn out.Unplug appliances when you're not using them. Or, use a "smart" power strip that senses when appliances are off and cuts "phantom" or "vampire" energy use.Wash clothes in cold water whenever possible. As much as 85 percent of the energy used to machinewash clothes goes to heating the water. Use a drying rack or clothesline to save the energy otherwise used during machine drying. 2)Save water to save money. Take shorter showers to reduce water use. This will lower your water and heating bills too.

Install a low-flow showerhead. They don't cost much, and the water and energy savings can quickly pay back your investment. Make sure you have a faucet aerator on each faucet. These inexpensive appliances conserve heat and water, while keeping water pressure high. Plant drought-tolerant native plants in your garden. Many plants need minimal watering. Find out which occur naturally in your area. 3)Less gas = more money (and better health!). Walk or bike to work. This saves on gas and parking costs while improving your cardiovascular health and reducing your risk of obesity. Consider telecommuting if you live far from your work. Or move closer. Even if this means paying more rent, it could save you money in the long term. Lobby your local government to increase spending on sidewalks and bike lanes. With little cost, these improvements can pay huge dividends in bettering your health and reducing traffic. 4)Eat smart. If you eat meat, add one meatless meal a week. Meat costs a lot at the store-and it's even more expensive when you consider the related environmental and health costs. Buy locally raised, humane, and organic meat, eggs, and dairy whenever you can. Purchasing from local farmers keeps money in the local economy.

-Vishal Chaudhari

S.Y. B.tech

TECHNICAL ARTICLES

LINE FOLLOWING ROBOT

The mobile line follower robot is a type of mobile robot with only has one specific task which is to follow the line made with black tape over the white background or vise verse. The LFR perhaps is one of the most popular robot build by the roboticists. What makes this LFR is so popular, I think because of its simplicity and yet it could be used as the teaching tools of how we could implement the industrial standard control system such as the PID (Proportional Integral Deferential) control system on this robot. Another factor probably is the increase of the LFR annual tournament conducted in many countries. The basic principal of the line follower robot actually almost the same as the light follower robot, but instead of tracking the light the LFR sensor is used to track the line, therefore by differentiating the line color and it's surrounding (black over white or vise verse) any light sensitive sensor could be used to navigate the mobile robot to follow this track. Base on the above fact, I designed the simplest possible electronics circuit that use the navigation principal shown above to track the black tape line. The 2N3904 NPN Bipolar Junction Transistor (BJT) is designed to operate as the current gainer amplifier; this means we operate the 2N3904 transistor in its linear region. The advantages of using the transistor in its linear region is; the transistor collector current passed through the DC motor will varying according to the base current which controlled by the LDR (Light Dependent Transistor) and 10 K trimmer potentiometer (trimpot). Therefore the current through the DC motor will vary according to the light intensity received by the LDR. Using this simple principal we could easily used this circuit to track the black tape by locating the LDR and the white LED in such a way that the LDR will receive less light from the white LED when the LDR position right on top of the black tape and this will make the DC motor to turn slowly (less collector current). When the LDR position outside the black tape (on the top of the white background) the LDR will receive more light from the white LED; this will make

-Deepak Prasad
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TECHNICAL ARTICLES

ARTIFICAL LIFE- NATURE'S WORK UNDERTAKEN

"Art" + "Life" = Artificial Life: Life made by Man rather than by Nature. Our technological capabilities have brought us to the point where we are on the verge of creating "living" artifacts. The field of Artificial Life is devoted to studying the scientific, technological, artistic, philosophical, and social implications of such an accomplishment. Artificial Life ("AL" or "A-Life") is the name given to a new discipline that studies "natural" life by attempting to recreate biological phenomena from scratch within computers and other "artificial" media. A-life complements the analytic approach of traditional biology with a synthetic approach: rather than studying biological phenomena by taking living organisms apart to see how they work, we attempt to put together systems that behave like living organisms. The process of synthesis has been an extremely important tool in many disciplines. Synthetic chemistry — the ability to put together new chemical compounds not found in nature — has not only contributed enormously to our theoretical understanding of chemical phenomena, but has also allowed us to fabricate new materials and chemicals that are of great practical use for industry and technology. Artificial life amounts to the practice of "synthetic biology," and, by analogy with synthetic chemistry, the attempt to recreate biological phenomena in alternative media will result in not only better theoretical understanding of the phenomena under study, but also in practical applications of biological principles in industry and technology. By extending the horizons of empirical research in biology beyond the territory currently circumscribed by life-as-weknow-it, the study of Artificial Life gives us access to the domain of life-asit-could-be, and it is within this vastly larger domain that we must ground general theories of biology and in which we will discover novel and practical applications of biology in our engineerinendeavors.

-Akanksha Darode

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TECHNICAL ARTICLES

QUANTUM COMPUTING

Quantum computing represents a paradigm shift in the realm of computational technology, harnessing the principles of quantum mechanics to outperform classical computers in certain types of calculations. Unlike classical computers, which use binary bits to process information, quantum computers utilize quantum bits or qubits. These qubits are unique because they can exist in multiple states simultaneously, thanks to quantum superposition. This ability allows quantum computers to explore a vast number of possibilities in parallel. Additionally, quantum entanglement—a phenomenon where qubits become interconnected in such a way that the state of one qubit instantly influences the state of another, no matter the distance—enables unprecedented computational power. Quantum computing has the potential to revolutionize fields like cryptography by breaking encryption methods currently deemed secure and optimizing complex systems such as traffic flows and financial portfolios. However, the practical realization of quantum computers is fraught with challenges, including maintaining qubit stability and managing quantum decoherence, where qubits lose their quantum properties due to interaction with their environment. Researchers are investigating various quantum technologies, including superconducting qubits, which are created using superconducting circuits that exhibit quantum properties at very low temperatures; trapped ions, where ions are confined using electromagnetic fields and manipulated with lasers; and topological qubits, which aim to reduce error rates by encoding information in the global properties of quantum systems.

-Amol Kawade
S.Y. B.tech

TECHNICAL ARTICLES

5G NETWORK ARCHITECTURE

The architecture of 5G is multifaceted, comprising three key components: Enhanced Mobile Broadband (eMBB), Ultra-Reliable Low-Latency Communication (URLLC), and Massive Machine-Type Communications (mMTC). eMBB aims to provide significantly faster data rates and higher capacity, facilitating high-definition streaming, virtual and augmented reality experiences, and more robust mobile broadband services. URLLC focuses on providing ultra-low latency and high reliability, which are critical for applications requiring instantaneous feedback, such as autonomous vehicles and remote surgery. mMTC is designed to support a large number of connected devices efficiently, which is crucial for the Internet of Things (IoT) applications like smart cities and industrial automation. To achieve these objectives, 5G networks leverage a combination of advanced technologies including millimeter wave frequencies, which offer higher bandwidth but require more dense infrastructure, and Massive MIMO (Multiple Input Multiple Output), which uses a large number of antennas to improve network capacity and coverage. Beamforming is another key technology in 5G, allowing signals to be directed more precisely to devices, reducing interference and increasing efficiency.

Network slicing enables the creation of virtualized, isolated network segments tailored to different use cases, enhancing resource management and flexibility. Despite the potential benefits, the deployment of 5G faces challenges such as the need for extensive infrastructure upgrades, spectrum allocation, and addressing concerns about health and environmental impacts. As 5G technology continues to develop, it is expected to drive innovations across various sectors, transforming how we interact with technology, enhance connectivity, and build smart, connected environments.

-Shivram Punde
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TECHNICAL ARTICLES

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Artificial Intelligence (AI) and Machine Learning (ML) have become cornerstones of modern technology, revolutionizing how systems analyze data and make decisions. AI refers to the broader concept of creating intelligent machines capable of performing tasks that typically require human intelligence. This includes reasoning, learning, problem-solving, and understanding natural language. Machine Learning, a subset of AI, specifically involves algorithms that enable systems to learn from and make predictions or decisions based on data without explicit programming. ML algorithms are broadly categorized into supervised learning, unsupervised learning, and reinforcement learning. Supervised learning involves training models on labeled data, where the algorithm learns to map inputs to desired outputs, and is widely used in applications such as image recognition and language translation. Unsupervised learning, on the other hand, deals with unlabeled data and aims to identify hidden patterns or intrinsic structures within the data, which is useful for clustering and anomaly detection. Reinforcement learning involves training agents to make a sequence of decisions by rewarding them for correct actions and penalizing them for incorrect ones, which is commonly applied in robotics and game playing. Deep Learning, a subset of ML, utilizes neural networks with many layers to model complex patterns in data, enabling breakthroughs in fields such as natural language processing and autonomous vehicles. The impact of AI and ML extends across numerous industries, enhancing capabilities in healthcare with predictive diagnostics, finance with algorithmic trading and fraud detection, and customer service with chatbots and personalized recommendations. Despite their transformative potential, AI and ML also raise ethical concerns regarding bias, privacy, and the displacement of jobs. Addressing these issues while continuing to advance these technologies is crucial for ensuring their positive impact on society and harnessing their full potential.

-Saurav Panpatil
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TECHNICAL ARTICLES

BLOCKCHAIN TECHNOLOGY

Blockchain technology is a decentralized, distributed ledger system that underpins cryptocurrencies like Bitcoin and has potential applications beyond digital currencies. At its core, a blockchain is a chain of blocks, each containing a list of transactions. These blocks are linked together in a chronological order, forming an immutable and transparent record. Each block contains a cryptographic hash of the previous block, which ensures data integrity and security. Blockchain operates on a peer-to-peer network where each participant, or node, has a copy of the entire ledger. This decentralization eliminates the need for a central authority, reducing the risk of fraud and increasing trust among participants. Transactions are validated through consensus mechanisms, such as Proof of Work (PoW) or Proof of Stake (PoS), which ensure that only legitimate transactions are added to the blockchain. PoW requires participants to solve complex mathematical problems to validate transactions, while PoS relies on participants' stake in the network to validate transactions. Beyond cryptocurrencies, blockchain technology is being explored for various applications, including supply chain management, where it can provide end-to-end visibility and traceability; voting systems, to enhance election security and transparency; and smart contracts, which are self-executing contracts with the terms written into code, enabling automated and trustless transactions. However, challenges such as scalability, energy consumption, and regulatory issues need to be addressed for broader adoption. As the technology evolves, it has the potential to transform industries by providing secure, transparent, and efficient solutions for a wide range of applications.

-Rahul Patole

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TECHNICAL ARTICLES

CYBERSECURITY THREATS AND MITIGATIONS

Cybersecurity is an ever-evolving field focused on protecting systems, networks, and data from malicious attacks and unauthorized access. The landscape of cybersecurity threats is diverse and includes various types of attacks such as malware, phishing, ransomware, and Distributed Denial of Service (DDoS) attacks. Malware, which includes viruses, worms, and trojans, is designed to damage or disrupt systems and can be delivered through malicious attachments or compromised websites. Phishing attacks involve tricking individuals into divulging sensitive information, often through deceptive emails or websites that appear legitimate. Ransomware is a form of malware that encrypts a victim's data and demands a ransom for decryption. DDoS attacks overwhelm a target's network or server with excessive traffic, causing service outages and operational disruptions. To combat these threats, organizations implement a range of cybersecurity measures. These include firewalls and intrusion detection systems to monitor and control network traffic, encryption to protect data integrity and confidentiality, and multi-factor authentication to add layers of security to user access. Regular software updates and patches are critical for closing vulnerabilities that could be exploited by attackers. Additionally, employee training and awareness programs help mitigate the risk of social engineering attacks and ensure that staff are aware of security best practices. Incident response plans and disaster recovery strategies are essential for minimizing the impact of security breaches and ensuring business continuity. As cyber threats continue to evolve, staying informed about emerging risks and continuously updating security measures is crucial for safeguarding digital assets and maintaining trust in online systems.

-Vaishnavi Jadhav

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TECHNICAL ARTICLES

EDGE COMPUTING

Edge computing is a distributed computing paradigm that brings computational resources and data storage closer to the location where they are needed, rather than relying on centralized cloud servers. This approach aims to reduce latency, increase processing speed, and improve the overall performance of applications that require real-time data processing. In traditional cloud computing, data is sent to a centralized data center for processing, which can introduce delays due to the distance between the data source and the processing location. Edge computing addresses this issue by placing computing resources at the edge of the network, such as on IoT devices, local servers, or edge gateways. This localized processing allows for faster decision-making and response times, which is critical for applications like autonomous vehicles, industrial automation, and smart cities. For example, in a smart factory, edge computing enables real-time analysis of sensor data to detect and respond to equipment malfunctions immediately, preventing downtime and improving operational efficiency. Edge computing also reduces the amount of data that needs to be transmitted to the cloud, which can help alleviate network congestion and lower bandwidth costs. However, deploying edge computing infrastructure comes with its own set of challenges, including managing and securing distributed resources, ensuring interoperability between different devices and systems, and addressing data privacy concerns. Despite these challenges, the adoption of edge computing is growing as organizations seek to leverage its benefits for enhancing performance, scalability, and efficiency in a wide range of applications.

-Dhanashri Katkar
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TECHNICAL ARTICLES

AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR)

Augmented Reality (AR) and Virtual Reality (VR) are immersive technologies that transform user experiences by altering or creating environments through digital means. AR overlays digital information onto the real world, enhancing the user's perception of their environment with interactive elements. This is achieved through devices such as smartphones, tablets, or AR glasses, which use cameras and sensors to blend digital content with real-world visuals. Applications of AR include navigation systems that provide real-time directions on a vehicle's windshield, and educational tools that offer interactive learning experiences by overlaying information onto physical objects. VR, on the other hand, creates entirely virtual environments that users can interact with through specialized headsets and controllers. VR environments can simulate real-world locations or create entirely fictional worlds, providing immersive experiences for applications such as gaming, training simulations, and virtual tours. Both AR and VR leverage advanced technologies like computer vision, spatial computing, and real-time rendering to create their effects. The development of AR and VR is rapidly advancing with improvements in hardware, software, and content creation tools. However, challenges remain, including the need for high-performance computing to render complex virtual environments and address issues related to motion sickness in VR. As these technologies continue to evolve, they hold the potential to revolutionize various industries by enhancing user interaction, providing immersive learning and training experiences, and creating new forms of entertainment.

-Payal Waghmare
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TECHNICAL ARTICLES

RENEWABLE ENERGY TECHNOLOGIES

Renewable energy technologies are critical for addressing global energy demands while minimizing environmental impact. These technologies harness energy from natural sources that are replenished on a human timescale, such as solar, wind, hydro, and geothermal energy. Solar energy is captured through photovoltaic (PV) cells that convert sunlight into electricity or through solar thermal systems that use mirrors or lenses to concentrate sunlight and produce heat. Wind energy is generated using wind turbines that convert the kinetic energy of wind into electrical power. Both solar and wind energy have seen significant advancements in efficiency and cost reduction, making them increasingly viable for large-scale power generation. Hydropower utilizes the energy of flowing water, typically through dams or run-of-river systems, to generate electricity. It is a mature technology that provides a stable and reliable energy source, although its environmental impacts on aquatic ecosystems must be carefully managed. Geothermal energy exploits the heat from the Earth's interior, using steam or hot water from geothermal reservoirs to generate electricity or provide direct heating. Each renewable energy technology has its own set of advantages and challenges, such as intermittency issues with solar and wind power and environmental considerations for hydropower. Innovations in energy storage, such as advanced batteries and pumped hydro storage, are crucial for managing the variability of renewable energy sources and ensuring a consistent power supply. As the world transitions to a low-carbon energy future, renewable energy technologies play a central role in reducing greenhouse gas emissions, enhancing energy security, and promoting sustainable development.

-Kishor Gadekar

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TECHNICAL ARTICLES

DATA PRIVACY AND GDPR COMPLIANCE

Data privacy is a critical concern in the digital age, where personal information is increasingly collected, stored, and processed by organizations. The General Data Protection Regulation (GDPR) is a comprehensive data protection law enacted by the European Union (EU) to safeguard individuals' privacy and ensure that their personal data is handled with the utmost care. GDPR applies to any organization that processes the personal data of EU residents, regardless of the organization's location. The regulation introduces several key principles, including data minimization, which requires that only necessary data is collected; purpose limitation, which ensures that data is used only for specified and legitimate purposes; and data subject rights, which grant individuals the ability to access, rectify, erase, and restrict the processing of their data. GDPR also mandates that organizations implement appropriate technical and organizational measures to protect personal data from breaches and unauthorized access. Compliance with GDPR involves several steps, such as conducting data protection impact assessments, establishing data processing agreements with third parties, and ensuring transparency through clear privacy notices. Organizations must also appoint a Data Protection Officer (DPO) if their core activities involve large-scale processing of sensitive data. Non-compliance with GDPR can result in substantial fines and legal consequences, making it essential for organizations to integrate data protection into their business practices. The regulation has set a global standard for data privacy and influenced data protection laws in other jurisdictions, reflecting a growing recognition of the importance of safeguarding personal information in a digital world.

-Maruti Rokade

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TECHNICAL ARTICLES

ADVANCED POWER ELECTRONICS IN RENEWABLE ENERGY SYSTEMS

Power electronics play a crucial role in integrating renewable energy sources like solar and wind into the electrical grid. These systems typically involve converting the variable DC output of renewable sources into stable AC power suitable for grid integration. Advanced power electronics technologies, such as high-efficiency inverters and converters, are pivotal in this process.

Modern inverters, including those using silicon carbide (SiC) or gallium nitride (GaN) semiconductors, offer high efficiency and thermal performance, essential for handling the fluctuating outputs of renewable sources. These materials enable faster switching speeds and reduced losses compared to traditional silicon-based components. High-frequency transformers and inductors used in these inverters can handle the higher frequencies generated by these advanced semiconductors, which improves overall system efficiency.

Another significant development is the use of multi-level converters, which reduce harmonic distortion and improve the quality of the output power. These converters can produce a more sinusoidal waveform, minimizing the impact on the grid and extending the lifespan of electrical components.

Energy storage systems, such as advanced lithium-ion batteries and flow batteries, also benefit from these advancements. Power electronics are used to manage the charging and discharging cycles of these batteries efficiently, enhancing their performance and longevity. Integrating these systems with renewable sources requires sophisticated control algorithms and real-time monitoring to balance supply and demand effectively.

Additionally, the development of smart grid technologies allows for better integration of renewable sources by dynamically adjusting power flows and improving grid stability. Advanced power electronics systems are integral to the operation of smart grids, facilitating seamless communication and control.

In summary, advanced power electronics are transforming renewable energy systems by improving efficiency, reducing losses, and enhancing grid integration. As technology continues to evolve, these systems will play an increasingly vital role in achieving sustainable energy goals.

-Rahul Aade

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FOR READING . . . .