LBS INSTITUTE OF TECHNOLOGY FOR WOMEN
POOJAPPURA TRIVANDRUM

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

ELECTROVIBES

S2 ECE

2023 - 2027

EDITORIAL

MEET *THE* TEAM

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INTRODUCTION

WELCOME TO ELECTROVIBES – THE PULSE OF INNOVATION!

WE'RE THRILLED TO PRESENT THE LATEST EDITION OF OUR MONTHLY NEWSLETTER, BRINGING YOU THE MOST EXCITING UPDATES AND TRANSFORMATIVE EVENTS FROM OUR COLLEGE!

AS THE ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT (BATCH 2023-2027) AT LBS INSTITUTE OF TECHNOLOGY FOR WOMEN, POOJAPURA, WE ARE PROUD TO DELIVER THIS VIBRANT COLLECTION OF NEWS AND STORIES STRAIGHT TO YOU.

THIS EDITION SHINES A SPOTLIGHT ON YAGNA DHRUVA, OUR QUEEN OF FESTS, WHERE CREATIVITY AND INNOVATION COME ALIVE. IT'S A STAGE FOR GROUNDBREAKING IDEAS, BOUNDARY-PUSHING ENDEAVORS, AND A REIMAGINING OF THE FUTURE.

JOIN US AS WE CELEBRATE EXCELLENCE, SHARE INSPIRING JOURNEYS, AND EMBRACE THE RELENTLESS DRIVE FOR PROGRESS.

STAY CURIOUS. STAY INNOVATIVE. ENJOY READING!

HOW 5G TECHNOLOGY IS REVOLUTIONIZING ELECTRONICS AND COMMUNICATION

-LAKSHMA S

5G, THE FIFTH-GENERATION WIRELESS TECHNOLOGY, IS SET TO REVOLUTIONIZE TELECOMMUNICATIONS AND NUMEROUS SECTORS OF ELECTRONICS. WITH ULTRA-FAST INTERNET SPEEDS, LOW LATENCY, AND THE ABILITY TO CONNECT MILLIONS OF DEVICES, 5G IS RESHAPING HOW WE COMMUNICATE, WORK, AND LIVE. IT OFFERS SIGNIFICANTLY FASTER SPEEDS, IMPROVED CONNECTIVITY, AND MORE EFFICIENT DATA TRANSMISSION THAN 4G, WITH FEATURES LIKE HIGHER CAPACITY (SUPPORTING UP TO 1 MILLION DEVICES PER SQUARE KILOMETER), SPEEDS UP TO 100 TIMES FASTER THAN 4G, AND REDUCED LATENCY FOR NEAR-INSTANT COMMUNICATION. 5G OPERATES ON THREE FREQUENCY BANDS: LOW-BAND, MID-BAND, AND HIGH-BAND, EACH PROVIDING VARYING SPEEDS AND COVERAGE.

ONE OF THE MAJOR ADVANTAGES OF 5G IS ITS SPEED, ENABLING SMOOTH 4K AND 8K VIDEO STREAMING, FASTER DOWNLOADS , AND MINIMAL BUFFERING. IT ALSO SUPPORTS DEMANDING TECHNOLOGIES LIKE AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR), WHICH REQUIRE SUBSTANTIAL DATA TRANSFER RATES. THE REDUCED LATENCY OF 5G BENEFITS AREAS SUCH AS AUTONOMOUS VEHICLES, TELEMEDICINE, AND ONLINE GAMING, IMPROVING SAFETY, RELIABILITY, AND USER EXPERIENCE.

5G ALSO PLAYS A CRUCIAL ROLE IN THE INTERNET OF THINGS (IOT) , SUPPORTING UP TO 1 MILLION DEVICES PER SQUARE KILOMETER, WHICH IS IDEAL FOR DENSELY CONNECTED ENVIRONMENTS LIKE SMART CITIES.

THIS TECHNOLOGY WILL MAKE SYSTEMS LIKE TRAFFIC LIGHTS, ENERGY GRIDS, AND WASTE MANAGEMENT MORE EFFICIENT, AND IT WILL DRIVE INNOVATIONS IN IOT DEVICES, ENHANCING SMART HOMES AND INDUSTRIAL AUTOMATION. IN MANUFACTURING, 5G ENABLES REAL-TIME COMMUNICATION BETWEEN MACHINES, IMPROVES ROBOTICS AND AUTOMATION, AND SUPPORTS AUGMENTED REALITY FOR WORKERS, OPTIMIZING PRODUCTION PROCESSES AND PREDICTIVE MAINTENANCE. HOWEVER, THE GLOBAL ROLLOUT OF 5G FACES CHALLENGES, SUCH AS THE NEED FOR MASSIVE INFRASTRUCTURE INVESTMENT, ENVIRONMENTAL CONCERNS DUE TO THE INCREASED NUMBER OF ANTENNAS, AND CYBERSECURITY RISKS AS MORE DEVICES ARE CONNECTED. DESPITE THESE HURDLES, 5G'S POTENTIAL TO DRIVE INNOVATION ACROSS INDUSTRIES IS UNDENIABLE.

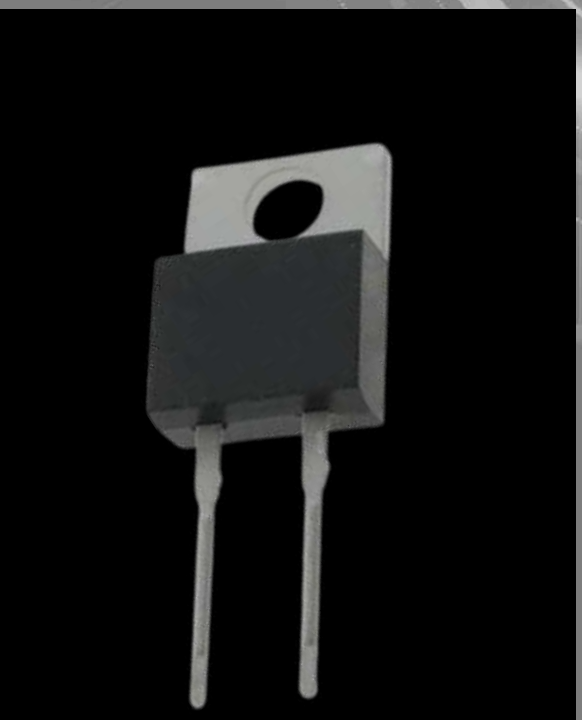
5G IS NOT JUST A FASTER MOBILE NETWORK; IT IS A TRANSFORMATIVE FORCE FOR INDUSTRIES AND SOCIETY. BY OFFERING FASTER SPEEDS, REDUCED LATENCY, AND GREATER CONNECTIVITY, IT WILL REVOLUTIONIZE ELECTRONICS, CREATE NEW APPLICATIONS, AND RESHAPE INDUSTRIES, FROM SMART CITIES TO AUTONOMOUS VEHICLES AND HEALTHCARE. AS 5G NETWORKS CONTINUE TO EXPAND WORLDWIDE, THEY WILL PAVE THE WAY FOR A MORE CONNECTED, EFFICIENT, AND INNOVATIVE FUTURE.

SILICON CARBIDE ELECTRONICS

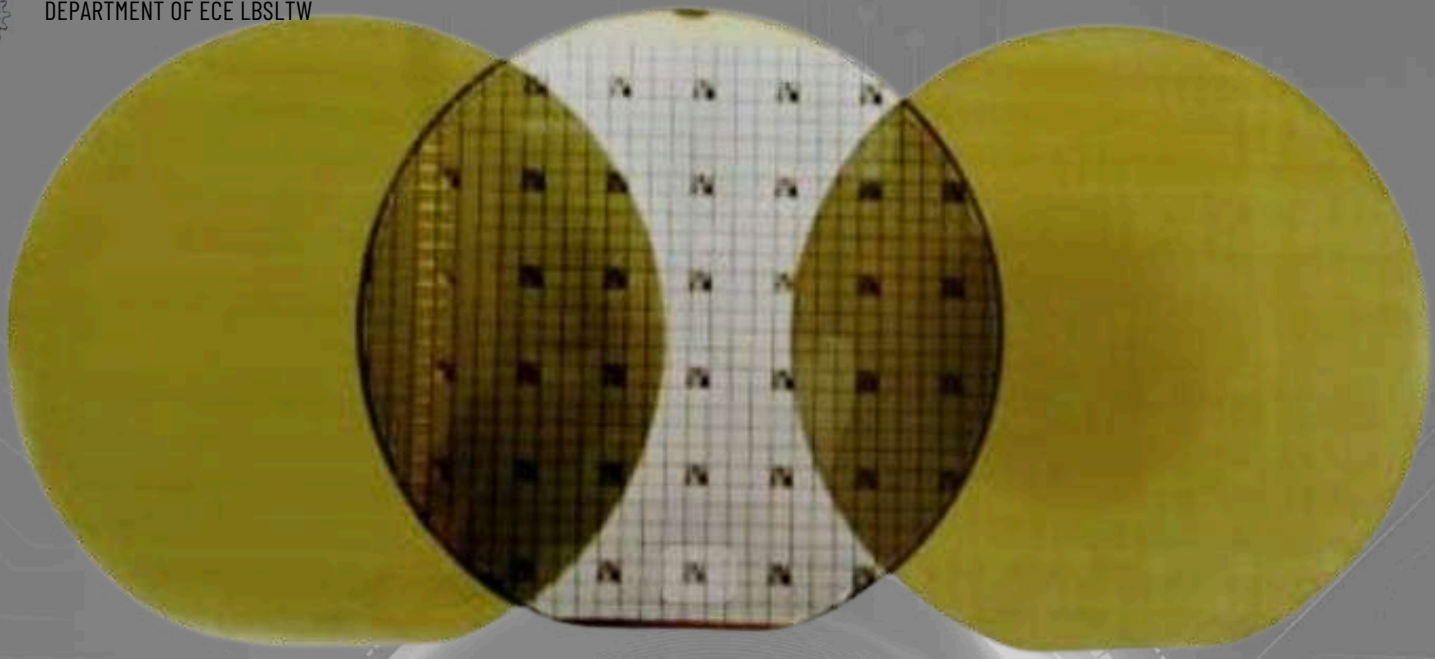
-HARINANDA

- SILICON CARBIDE (SIC) ELECTRONICS ARE SEMICONDUCTOR DEVICES MADE FROM SILICON AND CARBIDE. SIC ELECTRONICS ARE CONSIDERED A PROMISING TECHNOLOGY FOR NEXT-GENERATION POWER DEVICES.
- THEY HAVE SEVERAL ADVANTAGES OVER TRADITIONAL SILICON DEVICES, INCLUDING HIGHER VOLTAGE AND FREQUENCY CAPABILITIES, BETTER THERMAL MANAGEMENT, AND LOWER LOSSES.

History:



- 1824: JÖNS JAKOB BERZELIUS SUGGESTED THAT A SILICON
- CARBON CHEMICAL BOND MIGHT EXIST
- 1891: EDWARD G. ACHESON DISCOVERED SIC WHILE TRYING TO MAKE ARTIFICIAL DIAMONDS
- 1893: ACHESON PATENTED A METHOD FOR MAKING SIC POWDER
- 1905: HENRI MOISSAN DISCOVERED SIC IN AN IRON METEORITE
- 1907: THE FIRST SIC LED WAS MADE RECENT DEVELOPMENTS
- #IMPROVEMENTS IN 4H-SIC MOS DEVICE PERFORMANCE HAVE BEEN ACHIEVED.
- #NITROGEN-COMPOUND GASES HAVE BEEN INTRODUCED DURING THE OXIDATION AND POST-OXIDATION ANNEALING PROCESS



future:

- FAST CHARGING:
- SIC TECHNOLOGY CAN HELP WITH FAST CHARGING, WHICH IS IMPORTANT FOR EV ADOPTION. SIC-BASED CHARGERS CAN REDUCE CHARGING TIMES AND POWER LOSSES.
- SUSTAINABILITY:
- SIC TECHNOLOGY CAN HELP WITH SUSTAINABILITY BY ENABLING BIDIRECTIONAL CHARGING, WHICH CAN TRANSFORM EVS INTO MOBILE ENERGY-STORAGE UNITS.
- POWERTRAIN TYPE:
- THE TYPE OF POWERTRAIN IN AN EV DETERMINES HOW MUCH SIC IT USES. FOR EXAMPLE, 800-VOLT BEVS ARE MORE LIKELY TO USE SIC-BASED INVERTERS.
- DATA CENTERS :
- DATA STORAGE: SIC IS NEEDED IN DATA CENTERS TO SUPPORT THE LARGE AMOUNTS OF DATA GENERATED BY IOT, SOFTWARE, AND OTHER DATA-HEAVY OPERATIONS.

YAGNA DHRUVA

"WELCOME TO YAGNADHRUVA 2024: WHERE TECHNOLOGY MEETS COMPASSION

THIS APRIL 5-7, GET READY TO EXPERIENCE THE ULTIMATE INTERCOLLEGE TECHNO-CULTURAL FEST! YAGNADHRUVA IS BACK, BIGGER AND BETTER THAN EVER.

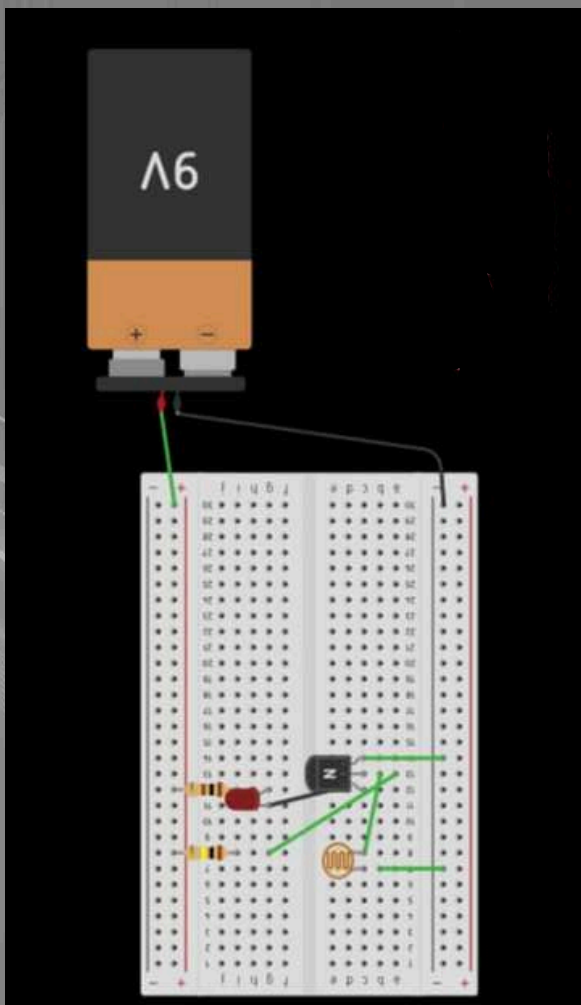
BUT THIS YEAR, WE'RE NOT JUST CELEBRATING INNOVATION AND CREATIVITY - WE'RE ALSO COMING TOGETHER TO MAKE A DIFFERENCE. WE'RE PROUD TO PARTNER WITH SOLACE TO SUPPORT CHILDREN WITH CHRONIC ILLNESSES. TOGETHER, WE AIM TO PROVIDE VITAL ECONOMIC ASSISTANCE TO THESE BRAVE YOUNG WARRIORS AND THEIR FAMILIES.

AND TO INSPIRE US ON THIS JOURNEY, WE'RE HONORED TO HAVE MR. JOB KURIAN AS OUR CHIEF GUEST FOR YAGNADHRUVA '24!

IN THE FOLLOWING PAGES, TAKE A SNEAK PEEK INTO THE EXCITING EVENTS, WORKSHOPS, AND PERFORMANCES THAT AWAIT YOU AT YAGNADHRUVA 2024. LET'S COME TOGETHER TO CELEBRATE TECHNOLOGY, CULTURE, AND COMPASSION!"

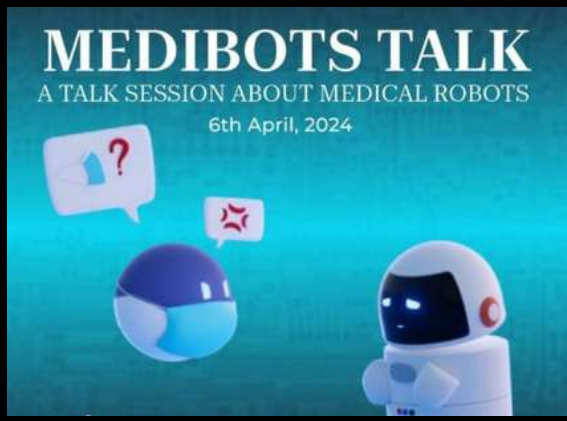
SIMULATION BASED LEARNING :

SIMULATION-BASED LEARNING WITH TINKERCAD IN COLABORATION WITH IEEE SSCS SBC LBSITW
AS PART OF YAGNA DHRUVA , IEEE SUCCESSFULLY CONDUCTED A HANDS-ON WORKSHOP ON CIRCUIT DESIGN AND SIMULATION USING AUTODESK TINKERCAD. PARTICIPANTS EXPLORED ELECTRONICS PROTOTYPING, ARDUINO PROGRAMMING, AND REAL-TIME SIMULATIONS IN A BEGINNER-FRIENDLY ENVIRONMENT. THE SESSION PROVIDED VALUABLE INSIGHTS, ENABLING ATTENDEES TO BUILD AND TEST CIRCUITS VIRTUALLY BEFORE REAL-WORLD IMPLEMENTATION.



MEDIBOTS TALKS :

MEDIBOT TALKS – A SESSION ON MEDICAL ROBOTS
MEDIBOT TALKS CONDUCTED ON 6TH APRIL EXPLORED THE ROLE OF MEDICAL ROBOTS IN MODERN HEALTHCARE. THE SESSION COVERED ADVANCEMENTS IN ROBOT-ASSISTED SURGERIES, AI-DRIVEN DIAGNOSTICS, AND REHABILITATION ROBOTICS, HIGHLIGHTING THEIR IMPACT ON PATIENT CARE AND MEDICAL INNOVATION. ATTENDEES GAINED INSIGHTS INTO THE FUTURE OF ROBOTICS IN MEDICINE THROUGH EXPERT DISCUSSIONS AND REAL-WORLD APPLICATIONS



GAME DESIGN 101 :

GAME DESIGN 101 – WORKSHOP
THE GAME DESIGN 101 WORKSHOP WAS SUCCESSFULLY CONDUCTED ON 5TH APRIL, OFFERING PARTICIPANTS AN ENGAGING INTRODUCTION TO THE FUNDAMENTALS OF GAME DEVELOPMENT. ATTENDEES EXPLORED KEY CONCEPTS SUCH AS GAME MECHANICS THROUGH THE INTERACTIVE SESSION. WHETHER BEGINNERS OR ASPIRING GAME DESIGNERS, PARTICIPANTS GAINED VALUABLE INSIGHTS INTO THE CREATIVE AND TECHNICAL ASPECTS OF GAME DESIGN. IT WAS A GREAT OPPORTUNITY TO LEARN AND BRING GAME IDEAS TO LIFE!

R-YANTRA:

2 DAY HANDS-ON ROBOTICS WORKSHOP AS PART OF RYANTRA 3.0, THE FLAGSHIP EVENT OF IEEE RAS SBC LBSITW CONDUCTED IN COLLABORATION WITH IEEE RAS KERALA CHAPTER. WORKSHOP WAS TAKEN BY JITHIN AND IRFAN FROM BONIC EDUCATION.THE WORKSHOP SUCCESSFULLY ACHIEVED ITS OBJECTIVE OF PROVIDING PARTICIPANTS WITH HANDS-ON EXPERIENCE IN DESIGNING AND DEVELOPING INNOVATIVE SOLUTIONS USING BRAIN.THE EVENT RECIEVED POSITIVE FEEDBACK.

FLUTTERMANIA:

THE EVENT FLUTTERMANIA OF THE INTRA-COLLEGIATE TECHNO CULTURAL FEST, YAGNA DHRUVA, CONDUCTED BY LBS INSTITUTE OF TECHNOLOGY FOR WOMEN ON 5TH APRIL 2024.THE WORKSHOP AIMED TO INTRODUCE PARTICIPANTS TO THE FUNDAMENTALS OF FLUTTER, A POPULAR CROSS-PLATFORM MOBILE APP DEVELOPMENT FRAMEWORK. THE EVENT COVERED THE BASICS OF FLUTTER, INCLUDING WIDGETS, LAYOUTS, AND NAVIGATION.THE WORKSHOP SUCCESSFULLY ACHIEVED ITS OBJECTIVE OF INTRODUCING PARTICIPANTS TO THE FUNDAMENTALS OF FLUTTER AND CROSS-PLATFORM MOBILE APP DEVELOPMENT. THE EVENT RECEIVED POSITIVE FEEDBACK, AND THE ORGANIZERS ARE PLANNING TO CONDUCT SIMILAR WORKSHOPS IN THE FUTURE.

VISION AND MISSION OF THE INSTITUTION

EMBARKING EXCELLENCE

VISION

TO BECOME A CENTER OF EXCELLENCE IN ELECTRONICS, COMMUNICATION AND INSTRUMENTATION TO FACILITATE PROFESSIONAL EDUCATION AND RESEARCH KEEPING HIGHER THE LEVEL OF VALUE SYSTEMS. TO PROVIDE INTELLECTUAL SERVICES FOR SOCIETY AND INDUSTRY BY APPLICATION OF ELECTRONICS, COMMUNICATION AND ENGINEERING

MISSION

TO BE A CENTER OF ACADEMIC EXCELLENCE EMPOWERING WOMEN IN THE TECHNICAL DOMAIN. TO SURPASS COMPETITIONS WITH CONFIDENCE AND BUILD SUCCESSF L CAREERS FOR THEMSELVES, SETTING AN EXAMPLE FOR THE SOCIETY