



# ANNUAL SDG

REPORT 2024

Bangladesh University of Business and Technology









































## **BUBT AT A GLANCE**





## **PREFACE**



Bangladesh University of Business & Technology (BUBT) remains dedicated to promoting sustainable development through education, innovation, and community engagement. In alignment with the United Nations Sustainable Development Goals (SDGs), BUBT has integrated sustainability into its academic programs, research initiatives, and social welfare activities.

This report highlights the university's ongoing efforts to contribute to the SDGs by fostering inclusive education, empowering communities, supporting environmental sustainability, and ensuring the well-being of students and society. It reflects our belief that higher education institutions play a vital role in shaping a better and more sustainable future.

Through the collective commitment of our students, faculty, and staff, BUBT continues to uphold its vision of creating responsible citizens and change-makers who will lead the way toward achieving the global goals.

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## **NO POVERTY**







#### Smart IoT Water Metering Model

This study introduces a smart water metering model for Bangladesh, integrating IoT and machine learning to modernize traditional analog systems. The proposed design enables wireless data transmission, real-time monitoring, and smart billing through digital wallets. Supporting multiple communication methods-Wi-Fi, Bluetooth, LoRa, Ethernet, and GSM-it ensures flexibility across infrastructures. Equipped with solar-powered lithium-ion backup, it remains operational during power outages. Using Isolation Forest algorithms, it detects tampering and enhances water management efficiency, transparency, and sustainability in urban areas, such as Dhaka.



#### **EVENTS**

#### BUBT Rover Scout Group: Food and Livelihood Relief Program

From 20–22 September 2024, the BUBT Rover Scout Group organized a Food and Livelihood Relief Program in Ramgor, Khagrachori, supporting disaster-affected families with food, water, livestock, and sewing machines. The initiative, aligned with SDG 2 (Zero Hunger) and SDG 8 (Decent Work), aimed to reduce hunger and promote self-employment, especially for women. Guided by the motto "Service Before Self," scouts, faculty, and volunteers worked together to empower communities and pledged to continue such efforts.





























## **NO POVERTY**



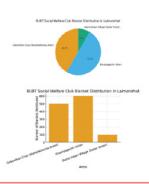


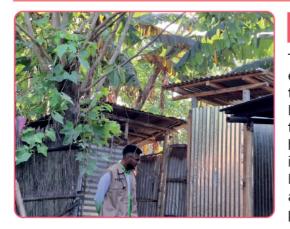




#### ■ Winter Relief Program for Underprivileged Communities

The BUBT Social Welfare Club, in collaboration with the BUBT BNCC Platoon, regularly organizes winter relief programs to support underprivileged, elderly, and specially-abled individuals in remote areas across the country. As part of its humanitarian commitment, the club distributes blankets and essential items among vulnerable communities, supervised by Assistant Professor Kazi Abubakar Siddique, Moderator of the Social Welfare Club and PUO of the BNCC Platoon. (Operations Wing, BUBT Social Welfare Club)





#### Flood Rehabilitation Project in Char Kalir Alga, Kurigram

The BUBT Social Welfare Club has successfully completed another phase of its ongoing humanitarian activities in the flood-affected area of Char Kalir Alga under Kurigram District. As part of their year-round relief and rehabilitation efforts, this phase included the construction of three houses and eleven toilets for affected families. The inspection team, led by Club President Md. Ashraful Karim Fahim and Organizing Secretary & Director of Operations Kifayat Ibne Rahman, visited the area to review the progress and prepare for the next phase of work.





## **NO POVERTY**



#### **SERVICES**

#### BUBT Offers Free BUS Service for the Students and Faculty Members

Bangladesh University of Business and Technology (BUBT) has launched six new buses to facilitate comfortable and safe transportation for its students and faculties. The initiative aims to enhance accessibility and convenience for daily commuters from different parts of the city. The Vice-Chancellor, along with senior officials, inaugurated the new buses on campus, reaffirming BUBT's commitment to ensuring better facilities for its students.





#### Female Hostel of BUBT

Bangladesh University of Business and Technology (BUBT) has introduced a new female hostel at House No. 09, Road No. 03, Duip Residential Area, Mirpur-2, Dhaka, effective from April 1, 2021. The hostel offers both single and double-seated rooms with monthly rents of Tk. 8,000, subsidized by Tk. 500-800 from BUBT. Seats are allotted on a first-come, first-served basis.



#### **BUBT Medical Team Ensures Continuous Health Support for** Students and Staff

The medical team at BUBT ensures the health and well-being of students, faculty, and staff through daily consultations, emergency care, and regular check-ups. Their dedicated service reflects BUBT's commitment to a healthy, safe, and supportive campus environment.

#### ■ Tiffin Corner and BUBT Canteen

The medical team at BUBT ensures the health and well-being of students, faculty, and staff through daily consultations, emergency care, and regular check-ups. Their dedicated service reflects BUBT's commitment to a healthy, safe, and supportive campus environment.



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## **ZERO HUNGER**



### RESEARCH



#### Real-Time Leaf Disease Detection

This research presents a real-time plant leaf disease detection system, PLD-Det, built on an improved YOLOv7 architecture to enhance accuracy and efficiency in crop monitoring. Trained on the PlantVillage dataset, the model achieved an accuracy of 98.53%, outperforming the original YOLOv7 by approximately 4%. The system effectively mitigates issues like poor image quality misclassification and through optimized feature extraction and SHAP-based feature importance analysis. This Al-driven approach provides farmers with a fast and reliable tool for early plant disease identification, thereby supporting sustainable agriculture.

#### Al-Driven Pest Control in Agriculture

This study examines the use of AI-powered UAVs in precision agriculture for pest control and crop health monitoring. Integrating machine learning and deep learning, UAVs detect diseases, manage weeds, and monitor crops with high accuracy. Reviewing advancements from 2022–2024, the research highlights improved sustainability and productivity while addressing challenges in data processing and operational efficiency.

### **EVENTS**

## BUBT Rover Scout GroupOrganizes IftarProgram to local Orphanage

As part of its commitment to fighting poverty and hunger, the BUBT Rover Scout Group organized an iftar distribution program for orphan students at a madrasa in Rupnagar, Dhaka. Faculty, students, and volunteers joined to share meals and spread compassion during Ramadan.





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## **ZERO HUNGER**



## Humanitarian Support for Northern Bangladesh Flood Victims by BUBT Rover Scout Group

The BUBT Rover Scout Group actively aids flood-affected areas in northern Bangladesh through rescue operations, medical camps, food distribution, and rehabilitation efforts. They help rebuild homes and provide essentials like corrugated sheets, sewing machines, goats, and poultry to restore livelihoods. In partnership with other scout units and organizations, they remain committed to supporting disaster-hit communities and rebuilding lives.







## BUBT Social Welfare Club Provides Food and Medical Aid to Flood Victims in Kurigram

On October 11–12, 2024, the BUBT Social Welfare Club organized a food and medical relief campaign in the flood-affected Kalir Alga Char area of Kurigram. Alongside a free medical and medicine distribution camp serving over 300 people by Dr. Syed Ushnish Ahmed and Dr. Md. Shahadat Hossain Soikot (MBBS), the club also distributed essential food and clothing items among the affected families.

































## GOOD HEALTH AND WELL-BEING



### RESEARCH



#### Modeling COVID-19-Kidney Co-Infection

This study presents a mathematical model analyzing COVID-19 and kidney disease co-infection using a seven-compartment SIR framework. Findings show that kidney disease increases COVID-19 transmission risk, offering insights to improve co-infection management and health strategies.

#### Fusion Model for Breast Cancer Detection

This study proposes a fusion-based deep learning model combining a Vision Transformer (ViT) and ASPP with attention for breast cancer classification. Achieving up to 100% accuracy on the BreakHis dataset, it offers a reliable and precise tool for early cancer detection.

### **EVENTS**



## BUBT's Initiatives for Mental Health and Well-Being

BUBT regularly holds seminars and sessions on Mental Health Awareness to promote well-being and emotional resilience among students, teachers, and staff. Led by experts and supported by university leaders, these programs encourage open dialogue, early intervention, and community support, fostering a positive and healthy campus environment.

#### ■ The Economics of Child Under-Nutrition in



The Department of Economics at BUBT held a seminar on "The Economics of Child Under-Nutrition in Bangladesh" on June 7, 2023, highlighting its economic impact and possible policy solutions.



#### Mental Health Awareness Session at BUBT

BUBT held an interactive session titled "Mental Health Awareness and Well-Being" under its "R U OK!" initiative. Prof. Dr. Mohammad Mahmudur Rahman discussed collective responsibility in mental well-being, while Vice Chancellor Prof. Dr. A B M Shawkat Ali reaffirmed BUBT's commitment to its community. Counselor Arafat Azad Ava emphasized empathy and open dialogue. The event promoted awareness and a supportive campus environment.



#### BUBT Law Club's Mental Health Awareness Session

The BUBT Law Club hosted a session on "Mental Health Awareness and Well-Being", featuring speakers who emphasized emotional wellness and the role of academia in promoting mental health. The event reinforced BUBT's commitment to fostering well-being and awareness within its community.































## QUALITY EDUCATION



BANGLADESH UNIVERSITY OF BUSINESS & TECHNOLOGY ( E





### **EVENTS**

#### Digital Twin-Enabled Smart Healthcare

This research proposes a digital twin—based healthcare system integrating blockchain, IoT, and machine intelligence for secure, automated, and sustainable medical operations. The framework enhances patient care, research, and resource management through real-time monitoring and advanced diagnostics, aiming to make healthcare more efficient, transparent, and innovative.

#### Multi-Turn Question Answer Generation

This study presents a historical QA dataset based on the Ubuntu Dialogue Corpus for chatbot training and NLP research. It includes 9,364 contexts and 36,438 guestion-answer pairs from multi-turn dialogues, enabling applications in deep learning, reading comprehension, translation, and open-domain question answering.

#### Intra-University Cultural Competition 2024

BUBT hosted the Intra-University Cultural Competition 2024 from January 21-23, providing students with a vibrant platform to express their artistic talents and creativity. Through music, dance, drama, and other performances, the event encouraged teamwork, confidence, and collaboration among participants. By engaging students in inclusive and co-curricular learning experiences beyond the classroom, the competition promoted the principles of lifelong learning and holistic education.

#### **IEEE BUBT Seminar Explores Robotics** and Embedded Systems in the 4IR Era

On May 5, 2024, IEEE BUBT organized a seminar on "Robotics and Embedded Systems in the 4IR Era", highlighting emerging technologies and their applications in the Fourth Industrial Revolution. Participants gained valuable insights into robotics, embedded systems, and future industry trends, enhancing their technical knowledge and readiness for advanced technological careers. This initiative demonstrates BUBT's commitment to providing quality technical education and skill development opportunities.



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## **QUALITY** EDUCATION



#### **BUBT Hosts Entrepreneurship Fair** Women Entrepreneurship Seminar 2024

On May 9, 2024, BUBT organized the Entrepreneurship Fair and Women Entrepreneurship Seminar 2024, engaging students in a dynamic full-day event. The seminar featured distinguished guests, including Prof. Dr. Md. Masudur Rahman and Tahmina Azam, who shared their expertise and insights. With 18 stalls showcasing innovative ideas, the fair provided a vibrant platform to promote entrepreneurship and empower women entrepreneurs. This initiative reflects BUBT's commitment to offering practical learning opportunities and skill-building experiences for students.



#### BUBT CSE Department Hosts Workshop on Cybersecurity in Academia

On May 8, 2024, the CSE Department of BUBT conducted a workshop titled "Cybersecurity Spectrum in Academia: Research, Practice, and Competition". The session featured keynote speakers Tanvir Hassan Zoha, Hasibul Hossain Shajeeb, Asif Alif, Tareq Raihan, and Md. Zahid Hossain Sajid, who shared their expertise on cybersecurity research, practical applications, and competitive strategies. Participants gained valuable knowledge on emerging trends, best practices, and innovative approaches in cybersecurity, enhancing their technical skills and academic preparedness.



#### Industrial Visit to Impress Newtex by BUBT Textile Engineering Students

The Department of Textile Engineering at BUBT organized a day-long industrial visit to Impress Newtex on February 22, 2025, for the students of Intake 35. Through direct interaction with industry professionals, students gained practical insights into production technologies, quality control, and operational manageexperiential learning ment. This initiative bridged the gap between theory and practice, equipping students with essential industry knowledge to strengthen their professional readiness for the textile sector.



































## **QUALITY EDUCATION**



#### BUBT Hosts Lecture on "Machine Learning in Practice across Australian Industries"

Bangladesh University of Business and Technology (BUBT) organized a lecture titled "Machine Learning in Practice across Australian Industries" under the Vice-Chancellor Lecture Series, hosted by BRIC.

Keynote speaker Dr. Ashfaqur Rahman highlighted the transformative role of machine learning across industries. Prof. Santi Narayan Ghosh and Vice-Chancellor Prof. Dr. A B M Shawkat Ali emphasized integrating advanced technologies into academia and industry.



#### IEEE BUBT Hosts Seminar on Navigating Cybersecurity and Tracking Cyberbullying

The IEEE BUBT Student Branch organized an enlightening Seminar on Navigating Cybersecurity and Tracking Cyberbullying, focusing on raising digital awareness and empowering participants with practical strategies to address online safety concerns. The session provided valuable insights into modern cybersecurity practices, ethical online behavior, and tools for identifying and preventing cyberbullying. Through interactive discussions, the seminar encouraged responsible digital citizenship and enhanced participants' capacity to navigate the evolving challenges of the cyber world.



#### BUBT Hosts and Concludes ICPC Asia Dhaka Regional Contest 2023

The Bangladesh University of Business and Technology (BUBT) proudly hosted the Asia Dhaka Regional Contest 2023 of the International Collegiate Programming Competition (ICPC) on November 3–4, 2023, at its campus. The prestigious two-day event brought together top programming teams from various institutions to showcase their expertise in problem-solving, coding, and innovation.

The competition commenced with an inaugural ceremony on November 3, marking the beginning of an intellectually stimulating journey for participants. On November 4, the event concluded with a grand award ceremony that celebrated the outstanding achievements, creativity, and teamwork of the contestants. The successful hosting of this regional contest reflects BUBT's strong commitment to advancing computing education, nurturing young innovations, and promoting global-level academic excellence in Bangla-



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**05** GENDER EQUALITY



## GENDER EQUALITY



### RESEARCH



#### IoT-Based Women's Safety System

This study introduces a machine learning-driven IoT device designed for real-time detection and prevention of sexual harassment. The system utilizes nine force-sensitive resistors embedded in the clothing, transmitting sensor data to the cloud via a NodeMCU. Using the AdaBoost classifier, which achieved 99.3% accuracy, the model classifies harassment-related activity and triggers instant alerts through a mobile app to notify authorities. Portable and adaptable to any outfit, this intelligent wearable integrates IoT, cloud computing, and ML to provide an innovative, proactive solution for enhancing women's safety.

#### BUBT Rover Scout Group Engages in Traffic Management Initiative

On October 24, 2024, members of the BUBT Rover Scout Group joined a traffic management initiative in Mirpur, Dhaka. Seven scouts assisted in controlling traffic and guiding pedestrians, earning appreciation from locals. The program promoted road safety while supporting SDG 1 (No Poverty) and SDG 5 (Gender Equality). The BUBT Rover Scout Group plans to continue such community service initiatives to foster safety and responsibility.

#### **EVENTS**



#### BUBT Launches Women Entrepreneurship Development Initiative

The Bangladesh University of Business and Technology (BUBT) has launched the Women Entrepreneurship Development Initiative to empower female students through training, mentorship, and networking opportunities, promoting innovation, gender equality, and leadership.

































06 **CLEAN WATER** AND SANITATION



## **CLEAN WATER** AND SANITATION







#### Smart-Agri: IoT-ML Farm Management

This study presents Smart-Agri, an IoT and Machine Learning (ML)-driven smart agricultural management platform designed to tackle modern farming challenges. system enables farmers to remotely monitor and control irrigation, optimize fertilizer use, and receive data-driven recommendations for improved yield and sustainability. Integrating blockchain ensures secure data management, while energy harvesting technology powers IoT devices continuously. Achieving 89.5% model accuracy, Smart-Agri offers comprehensive services—such as pesticide guidance and water motor control-through cloud-based and mobile applications, enabling efficient and sustainable agriculture.

#### Smart-Agri: IoT-ML Farm Management

This study introduces an IoT-enabled Pond Water Quality Monitoring System for precision fish farming and environmental sustainability. Equipped with six key sensors—Dissolved campus environment for all. Oxygen, Turbidity, Temperature, pH, Electrical Conductivity, and Salinity-the system continuously monitors pond conditions in real time. Data are transmitted to a cloud platform for storage, analysis, and visualization via web and mobile apps. With automated alerts, remote control of pumps and aerators, and trend analysis, this intelligent system enhances aquatic ecosystem management, optimizing fish farming productivity and sustainability.

### SERVICES



#### **BUBT Clean Water and Water Filter Facilities:** Ensuring Safe and Healthy Hydration for All

BUBT ensures clean and safe drinking water through modern supply and advanced filtration systems, regularly maintained and monitored for quality. This initiative reflects the university's strong commitment to a healthy, safe, and sustainable



This initiative reflects BUBT's dedication to maintaining high standards of campus infrastructure and public health. By providing safe water access points at convenient locations, the university aims to foster a cleaner, healthier, and more sustainable campus environment. This effort is part of BUBT's broader commitment to student welfare and aligns with national and global goals for health, hygiene, and sustainable development.



























06
CLEAN WATER
AND SANITATION



## **CLEAN WATER AND SANITATION**



### **EVENTS**

#### ■ Flood Rehabilitation Project in Char Kalir Alga,

The BUBT Social Welfare Club has successfully completed another phase of its humanitarian initiatives in the flood-affected area of Char Kalir Alga, under Kurigram District. As part of its ongoing relief and rehabilitation efforts, the club constructed three houses and eleven toilets for families who lost their homes and sanitation facilities due to recurring floods. These new structures provide safety, dignity, and improved living conditions for the affected residents.

An inspection team, led by Md. Ashraful Karim Fahim, President of the BUBT Social Welfare Club, and Kifayat Ibne Rahman, Organizing Secretary & Director of Operations, visited the area to assess the progress of the work and engage with local residents for future planning.

Through these efforts, the BUBT Social Welfare Club continues to uphold its commitment to social responsibility and community development, empowering students to contribute meaningfully toward a more resilient and compassionate society.









































## AFFORDABLE AND CLEAN ENERGY



#### RESEARCH



#### Circular Economy in Green Garments

This study investigates how circular economy practices influence the sustainable performance of Bangladesh's green garment industry. Based on survey data from 418 managers, the findings show that circular practices significantly improve environmental, financial, and social outcomes by enhancing resource efficiency and energy conservation. The study highlights circular production as a key strategy for achieving sustainable competitiveness in emerging economies.

#### IoT-Enabled Smart DC Microgrid

This study presents the design and implementation of a smart DC microgrid system integrating renewable energy sources—solar, wind, and DC generation—with battery storage and IoT-based real-time data analytics. A microcontroller manages power flow and system stability, while IoT connectivity enables continuous performance monitoring and optimization. Results highlight solar energy as the most reliable source of energy. The system demonstrates potential for intelligent, sustainable energy management, paving the way for advancements in AI-driven optimization, wireless energy harvesting, and peer-to-peer energy sharing in future microgrid networks.

#### **EVENTS**



#### Outreach Program on Renewable Energy Awareness

The Department of Electrical and Electronic Engineering (EEE) at BUBT organized an Outreach and Awareness Program to promote Sustainable Development Goal 7: Affordable and Clean Energy. The event educated local school and college students on renewable energy through interactive sessions, demonstrations, and hands-on learning with solar PV systems. Guided by faculty and senior students, participants learned about energy conservation and sustainability. The program extended BUBT's mission beyond campus, inspiring youth to embrace clean energy and environmental responsibility.

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## AND CLEAN ENERG



#### Seminars and Workshops on Renewable Energy and Energy Efficiency

To promote awareness and technical understanding of renewable energy and energy efficiency, Bangladesh University of Business and Technology (BUBT) organized a series of seminars and workshops aligned with Sustainable Development Goal 7: Affordable and Clean Energy. These programs aimed to educate students and faculty on emerging technologies, sustainable energy practices, and the global transition toward cleaner energy systems.

The events featured expert lectures, interactive sessions, and panel discussions on topics such as solar photovoltaic systems, wind energy, smart grids, and sustainable power solutions. Participants gained valuable insights into both theoretical concepts and real-world applications of renewable energy technologies, helping them understand how innovation and sustainability intersect in the modern energy landscape.

As part of this initiative, a distinguished faculty member from Murdoch University, Australia, was invited as a guest speaker to share her expertise and international perspective on renewable energy integration and sustainable energy policies. Her session enriched participants' understanding of global energy challenges and innovative solutions for achieving net-zero emissions. Through these knowledge-sharing initiatives, BUBT continues to foster academic and professional engagement in renewable energy, inspiring students and faculty to contribute actively to a sustainable and energy-efficient future.

































## AFFORDABLE AND CLEAN ENERGY



#### Industrial Visit to Karnaphuli Hydropower Station, Kaptai – Promoting Renewable Energy Awareness

Bangladesh University of Business and Technology (BUBT) organized an industrial visit to the Karnaphuli Hydro Power Plant in Kaptai, the only hydropower station in Bangladesh. The visit was part of BUBT's ongoing efforts to support Sustainable Development Goal 7: Affordable and Clean Energy, which aims to ensure access to reliable, sustainable, and modern energy for all.

During the visit, students observed the generation of electricity from hydropower — a renewable energy source that converts the kinetic energy of flowing water into clean electricity without harmful emissions. Engineers at the plant explained the operational principles of hydro turbines, generators, and control systems, providing students with valuable practical exposure to renewable energy technologies.

This hands-on experience deepened students' understanding of clean energy production and emphasized the role of renewable power in reducing dependence on fossil fuels and combating climate change. Faculty members accompanied the students to link academic learning with practical applications. Through such industrial visits, BUBT continues to reinforce its commitment to SDG 7, empowering future engineers to contribute to sustainable energy solutions for Bangladesh and beyond.



































08
DECENT WORK AND ECONOMIC GROWTH

## DECENT WORK AND ECONOMIC GROWTH







#### Recycling Post-Consumer Garments

This study analyzes 15 years of progress in recycling and reusing post-consumer garments (PCG) to address environmental challenges in the textile Scopus bibliometric Using (2010-2024), it explores advanced recycling technologies, including pyrolysis for bio-oil, nanofiber fabrication, and thermal-insulating textile production. The study highlights opportunities in circular economy models and socio-economic benefits, while discussing obstacles such as contamination, limited infrastructure, and reduced product quality. Practical guidelines for waste segregation and disinfection are proposed to enhance sustainability and achieve textile-related SDGs.

#### Alternative Water Use in Textile Dyeing

This study explores the use of rain, river, and seawater as sustainable alternatives to groundwater in Bangladesh's textile coloration industry. Experiments on cotton and polyester fabrics assessed color fastness to rubbing, washing, and perspiration using standard dyeing recipes. Results show polyester achieved excellent fastness (4–5), while cotton displayed moderate results (2–3). Overall, alternative water sources maintained 40–60% of traditional dyeing quality without recipe changes. The findings demonstrate a viable path to reduce groundwater dependence and promote sustainable consumption (SDG 12) in textile production.

#### **EVENTS**



## Entrepreneurship Development Program at BUBT Industry

As part of BUBT's entrepreneurship development program, female students set up an Iftar sales center near the campus during Ramadan, offering hygienic, freshly baked food at affordable prices. The initiative gave them hands-on business experience, teaching production, sales, and customer management. Despite academic challenges, they expressed gratitude to BUBT for the support that strengthened their confidence as future entrepreneurs.



























08
DECENT WORK AND ECONOMIC GROWTH

## DECENT WORK AND ECONOMIC GROWTH





#### Fair Agreement with Outsourced Employment

The Building Construction Agreement was signed between Bangladesh University of Business and Technology (BUBT) and Ms. Khaza Bilkis Rabbi ("the Contractor"). The Contractor shall ensure fair and equitable treatment for all workers engaged in the construction of the new building, including those employed through any subcontractors or labor suppliers. This commitment requires that outsourced employees receive equal rights in terms of wages, benefits, safe working conditions, and freedom from discrimination. This obligation must be formally included in all subcontracting agreements, and the Employer reserves the right to audit compliance with this provision.

Professor Md. Abu Saleh, Advisor and Member of the BUBT Trust; Professor Dr. A B M Shawkat Ali, Vice-Chancellor; Professor Dr. Md. Ali Ahmed, Treasurer; Professor Dr. Syed Masud Husain, Dean of the Faculty of Business and Social Sciences; Dr. Md. Harun-or-Rashid, Registrar; along with other BUBT officials, staff, and a representative of Ms. Khaza Bilkis Rabbi, were present at the signing of the Fair Employment Agreement for the Outsourced Workers Program.

























## DECENT WORK AND ECONOMIC GROWTH



#### BUBT Successfully Hosts Career Fair 2024, Bridging the Gap Between Academia and Industry

The "BUBT Career Fair 2024", jointly organized by the Career Guidance Office of Bangladesh University of Business and Technology (BUBT) and bdjobs.com, was successfully held on January 10, 2024, at the BUBT campus. The event provided a vibrant platform for students and graduates to connect with leading employers and explore diverse career opportunities.

The inaugural ceremony was graced by Mr. Jasim Uddin, President of the Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) and Vice Chairman of the Bengal Group of Industries, as the Chief Guest, while Mr. Md. AKM Fahim Mashroor, Co-founder and CEO of bdjobs.com Limited, attended as the Special Guest. Representing the university leadership were Prof. Dr. Md. Fayyaz Khan, Vice-Chancellor of BUBT; Prof. Dr. Md. Ali Noor, Pro Vice-Chancellor; and Prof. Md. Enayet Hossain Miah, Member of the BUBT Trust.

The ceremony was presided over by Prof. Dr. Syed Masud Husain, Dean of the Faculty of Business and Social Sciences, and conducted by Mr. A. B. M. Mesbahul Hasan, Deputy Director of the Career Guidance Office. The event was attended by Deans, the Registrar, Department Chairmen, faculty members, officers, staff, and a large number of students. The distinguished guests congratulated BUBT graduates and praised the university for organizing a successful and impactful event that will significantly contribute to shaping the future careers of its students.





































## INDUSTRY, INNOVATION AND INFRASTRUCTURE







#### Next-Generation Sustainable Textiles

This work explores next-generation textiles (NGTs), highlighting their techniques, applications, and challenges in creating a sustainable future. Covering nanotechnology, 3D printing, recycling, wearable electronics, biomimicry, machine learning, and energy harvesting, the study emphasizes sustainability, multifunctionality, and smart integration. NGTs promise enhanced performance, personalization, safety, and wearability. Key challenges-such as scalability, cost, and technological gaps—can be addressed through open innovation, fostering collaboration and knowledge sharing. This paper provides a roadmap for advancing functional, intelligent, and sustainable textile solutions.

#### BananaSet: Dataset of Bangladeshi Varieties

This project introduces BananaSet, a comprehensive image dataset featuring six major banana varieties found in Bangladesh-Shagor, Shabri, Champa, Anaji, Deshi, and Bichi. The dataset was collected from different local marketplaces using a smartphone camera under diverse lighting and environmental conditions to ensure authenticity and variation.

Designed to support agricultural research, computer vision, and machine learning applications, BananaSet enables advancements in fruit classification, ripeness detection, and quality assessment. It also serves as a benchmark for Al-driven food analysis, smart farming, and supply chain optimization, contributing to innovation in both agriculture and the food industry.

### **EVENTS**

#### Industrial Tour to Ha-Meem Group by the Department of Management



On May 5, 2024, Marketing Department students visited Akij Bakers Ltd. to learn about production, packaging, and branding. The visit included a Q&A with company executives, offering practical industry insights and internship opportunities.

#### Industrial Visit to Akij Bakers Ltd. by the Department of Marketing



Students from the Department of Marketing visited Akij Bakers Ltd., gaining hands-on insights into production, quality assurance, and branding. The tour and Q&A session with company executives enriched their practical knowledge and strengthened industry-academia ties.





























## INEOUALITIES







#### **Key Audit Matters in Emerging Economies**

This study analyzes key audit matter (KAM) disclosures among Bangladeshi listed firms, examining the effects of industry, firm, and auditor characteristics. Based on 447 firm-year observations (2018–2020), results show that larger, older, and regulated firms disclose more KAMs, while Big-4 auditors provide greater detail. Audit fees and rotation show minimal impact, offering insights for As part of the entrepreneurship development audit quality and policy enhancement in emerging program organized by the BUBT Career Guidmarkets.

#### Sensor-Based Remote Health Monitoring

This study proposes an IoT-based remote patient monitoring system using an enhanced AdaBoost algorithm to analyze real-time health data and detect early medical risks. It enables timely alerts, improves patient outcomes, reduces costs, and advances AI-driven remote healthcare.

#### **EVENTS**

#### Entrepreneurship Development Program at BUBTIndustry



ance Office for undergraduate students of various programs, a group of female students established a sales center adjacent to the BUBT campus to sell different Iftar items during the holy month of Ramadan. These items were prepared in a fully hygienic environment and served fresh to customers, baked instantly in the oven. The customers appreciated the food for its taste, quality, and reasonable price.

#### BUBT Hosts National IT Competition for Youth with Disabilities

BUBT regularly hosts the competition to promote inclusive education and digital empowerment. Participants from across Bangladesh compete in categories-visually, physically, hearing, and neurodevelopmentally impaired-in events such as Microsoft Word, Excel, PowerPoint, and programming.

Mr. Ranjit Kumar, Executive Director of BCC, attended as Chief Guest, along with BUBT's Pro-Vice Chancellor. The event reflects BUBT's commitment to equality and accessibility for all learners.



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## SUSTAINABLE CITIES AND COMMUNITIES



### RESEARCH



#### Reinforcement Learning for Traffic Control

This project presents a traffic light control system using reinforcement learning (Deep Q-Learning) to optimize urban traffic flow. Intelligent agents dynamically adjust traffic signals to minimize delays, reduce congestion, and improve safety at intersections. By optimizing green (10 seconds) and red (5 seconds) signal durations, the system reduces waiting times by up to 50%. The research demonstrates that reinforcement learning can enhance signal synchronization, improve travel efficiency, and mitigate urban traffic challenges, offering a promising solution for smarter, adaptive traffic management systems.

#### Automatic Bangladeshi Number Plate Recognition

This study develops a real-time ANPR system using YOLOv4 and Tesseract OCR, achieving 97% accuracy in detecting Bangladeshi number plates—offering an efficient solution for traffic monitoring.

## BUBT IT Club Organizes One-Day Educational and Cultural Tour to Sonargaon

The BUBT Photography Club organized the 6th Intra-University Photography Exhibition on September 28–29, 2024, showcasing students' creativity and artistic talent. The event featured diverse photographs that reflected the cultural richness of the BUBT community and inspired appreciation for art across the campus.

### **EVENTS**

#### BUBT Photography Club Hosts 6th Intra-University Photography Exhibition 2024



The BUBT Photography Club organized the 6th Intra-University Photography Exhibition on September 28–29, 2024, showcasing students' creativity and passion for visual storytelling. The event celebrated artistic talent and cultural richness across the BUBT community.



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## SUSTAINABLE CITIES AND COMMUNITIES





#### BUBT Organizes Campus Cleaning Event to Promote Environmental Awareness

The Bangladesh University of Business & Technology (BUBT) organized a Campus Cleaning Event on the university premises, hosted by the Law Club, Faculty of Law, with enthusiastic participation from students, faculty members, and administrative staff.

The program began with an inspiring speech by Professor Dr. A. B. M. Shawkat Ali, Honorable Vice-Chancellor of BUBT and Chief Guest, who emphasized the importance of maintaining a clean and healthy campus environment and encouraged collective responsibility for cleanliness as part of academic and civic life.

Professor Dr. Syed Sarfaraj Hamid, Dean of the Faculty of Law, also addressed the gathering, praising the initiative for promoting environmental awareness and social responsibility among students.

After the inaugural session, participants actively cleaned various areas of the campus, showcasing teamwork and dedication to sustainability. The event reinforced BUBT's commitment to environmental stewardship and community engagement.



























RESPONSIBLE CONSUMPTION AND PRODUCTION



## RESPONSIBLE CONSUMPTION AND PRODUCTION



### RESEARCH

#### Recycling PET Bottles: Techniques and Applications

This work explores the recycling techniques and applications of polyethylene terephthalate (PET) bottle waste, a major environmental pollutant. It highlights advancements in mechanical and chemical recycling, emphasizing their roles in producing fibers, nanofibrous membranes, air water filtration materials, reinforced concrete, and energy-harvesting devices. The study examines the socio-economic factors influencing the adoption of recycling technology and waste management strategies. By examining recent progress, this paper highlights the potential of recycled PET (rPET) as a sustainable material for driving industrial innovation and promoting environmental preservation.

#### Silk-rPET Nanofabric for Air Purification

This study presents a hybrid silk—recycled PET (rPET) nanofabric embedded with green-synthesized silver nanoparticles (AgNPs) for advanced air purification. Produced via solution electrospinning, the material exhibited 96.58% particle filtration efficiency with low pressure drop (29.1 Pa/cm²). Characterization through SEM, FTIR, tensile testing, antibacterial assays, moisture management, and radiative heat barrier evaluation confirmed its mechanical robustness, antimicrobial activity against S. aureus and E. coli, as well as its resistance to water and heat. The developed nanofabric demonstrates strong potential as a high-performance, multifunctional air filtration material.



#### Hybrid Model for Palm Leaf Disease Detection

This study presents a hybrid deep learning framework for automated detection of palm leaf diseases, integrating Efficient Channel Attention Network (ECA-Net) with transfer learning approaches from ResNet50 and DenseNet201. By combining convolutional feature extraction and attention mechanisms, the model captures effectively intricate patterns and subtle disease characteristics from palm leaf images. The proposed system achieves 98.67% validation accuracy and 99.54% training accuracy, outperforming conventional models in classification precision and F1 score.

The hybrid model enhances diagnostic accuracy and reduces reliance on manual inspection, offering faster, scalable, and more reliable detection capabilities. Through extensive experimentation, this work sets a benchmark for AI-driven agricultural monitoring, promoting sustainable farming practices and early intervention to minimize yield loss while improving crop health management and productivity.



RESPONSIBLE





#### **EVENTS**

#### Bhangari: A Smart Step Toward a Greener Bangladesh

A group of young innovators from the Department of Computer Science and Engineering at Bangladesh University of Business and Technology (BUBT) has developed "Bhangari: The Scrap Collecting App", a conceptual prototype aimed at revolutionizing sustainable waste management in Bangladesh. The project recently earned first place in the BUBT Brainstorming Session 2024, recognized for its creativity, technical depth, and social impact.

The Bhangari app proposes a smart, technology-driven solution to bridge the communication gap between scrap collectors and users, making the recycling process more efficient, transparent, and community-oriented. Designed with an easy-to-use interface, the app allows users to schedule scrap pickups, receive fair pricing, track collectors through GPS, and make secure online payments. Collectors, on the other hand, gain reliable income sources and real-time access to collection requests — helping to organize an informal sector that employs nearly 8-10 lakh people nationwide.



Under the guidance of Md. Masudul Islam, Assistant Professor, Department of CSE, the team adopted the Agile methodology to ensure iterative design, adaptability, and rapid prototyping. The system architecture features user registration, communication modules, a feedback and rewards system, and an environmental impact tracker that displays users' recycling and carbon reduction contributions.



























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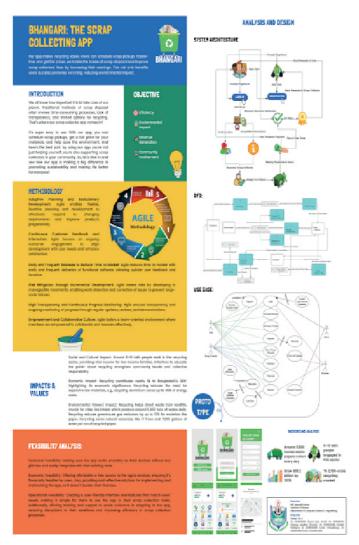
RESPONSIBLE CONSUMPTION AND



## RESPONSIBLE CONSUMPTION AND PRODUCTION



### **EVENTS**



The developers — Shaikh Shafeen Al Mayeen, Dipto Nandi, Syed Alve Ahad, Noman Ahmed, Antor Durjoy Chowdhury, Romeo Macline D'Costa, Saif Hossain Likhon, Hasibul Hasan Rabby, Soumya Balsrum Ritchil, and Jony Chandra Shil — envisioned Bhangari as more than just an app: a social movement promoting cleaner cities and economic inclusion for low-income workers.

The app's broader goals extend beyond technology: improving waste segregation, promoting environmental awareness, and integrating ethical and legal compliance into recycling practices. According to the proposal, proper recycling could boost Bangladesh's GDP by nearly 1% while reducing landfill pressure and saving natural resources such as trees and water.

By combining innovation, sustainability, and community engagement, Bhangari demonstrates how young minds can contribute to solving real-world problems. The project exemplifies BUBT's growing emphasis on "Technology for Social Good" — showing that a cleaner, greener future can begin with a simple idea, executed smartly and collaboratively.































13 CLIMATE ACTION



## **CLIMATE ACTION**







#### Solar Radiation Trends in Bangladesh

This study analyzes solar radiation trends in Bangladesh (1983–2022) using four methods: Linear Regression Analysis (LRA), Mann-Kendall (MK), Spearman Rank Correlation (SRC), and Innovative Trend Analysis (ITA). ITA identified 70 significant trends, surpassing traditional methods. Notably, Sitakunda showed the highest increase (+34.56 MJ/year), while Dhaka experienced the greatest decrease (-27.89 MJ/year). The results, influenced by factors such as aerosol loadings and sunshine duration, provide critical insights for solar energy development, agriculture, and climate change mitigation, aiding in sustainable policy-making.

#### Hybrid Car Adoption in Bangladesh

This study develops a conceptual framework for understanding the factors influencing the adoption of hybrid cars in Bangladesh, based on the UTAUT2 model. The framework identifies seven independent variables: performance expectancy, social influence, environmental concern, price value, hedonic motivation, facilitating conditions, and health benefits, which impact behavioral intentions to purchase hybrid cars. Despite the environmental advantages, the adoption of hybrid cars remains low. The findings provide valuable insights for marketers, policymakers, and environmental advocates to promote sustainable automotive choices and increase consumer awareness in Bangladesh.

#### **EVENTS**





## Humanitarian Initiatives for Climate Resilience and Disaster

Aligned with SDG 13: Climate Action, the BUBT Social Welfare Club conducts humanitarian programs to address the social impacts of climate change in Bangladesh. In response to frequent floods and other disasters, the club organized a Rehabilitation Program for Flood Victims, rebuilding and repairing homes for affected families to restore their safety and stability.





























13 CLIMATE ACTION



## **CLIMATE ACTION**



#### BUBT's Commitment to Climate Action and Humanitarian Responsibility

In addition, the club launched a Winter Clothing Distribution Campaign to protect underprivileged individuals from harsh winter conditions. Warm clothes and blankets were distributed to those in need, particularly in rural and low-income areas where cold-related illnesses and fatalities are common.

Beyond humanitarian relief, BUBT also emphasizes education and awareness as vital tools for climate action. To this end, the university arranged a Seminar on Climate Action aimed at raising awareness among students, faculty, and the broader community about the urgent need for climate adaptation and mitigation. Experts and faculty members discussed topics such as the causes and impacts of climate change, sustainable living practices, and strategies for community-based resilience.

Through these compassionate actions, BUBT demonstrates a strong commitment to climate resilience, social responsibility, and humanitarian response—emphasizing that climate action is not only about environmental protection but also about caring for people and building stronger, safer communities. These efforts reflect the university's dedication to fostering a culture of empathy, sustainability, and proactive engagement in mitigating the human impacts of climate change.







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## LIFE BELOW WATER







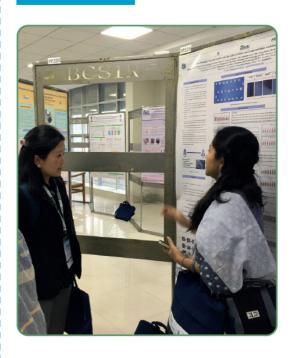
#### Ensemble Deep Learning for Fish Disease Classification

This project introduces two ensemble deep learning models for freshwater fish disease classification in Bangladesh: the Averaged Ensemble (AE) and the Performance Metric-Infused Weighted Ensemble (PMIWE). Utilizing pre-trained models and novel techniques, the system achieves a 97.53% testing accuracy with strong precision, recall, and F1-scores of 97%. The study enhances interpretability and trustworthiness by utilizing Grad-CAM, an explainable AI (XAI) method, providing valuable insights for automated, accurate fish disease diagnosis and informed management strategies in aquaculture.

#### Deep Learning for Marine Animal Classification

This research develops a Convolutional Neural Network (CNN) model for accurate classification of marine animals based on their visual characteristics. The model employs a systematic approach, spanning from data collection to CNN architecture design, and achieves an accuracy of 87.99%. The dataset is preprocessed, and hyperparameters are tuned to optimize performance. This research demonstrates the effectiveness of CNNs in classifying marine species, offering valuable insights for marine conservation, scientific research, and educational programs that support efforts to understand and preserve marine ecosystems.

#### **EVENTS**



#### Sustainable Fisheries: A Pillar of Global Food Security Response

A team of EEE students (23rd intake) from Bangladesh University of Business and Technology (BUBT) successfully completed a research project on aquatic fish cultivation under the supervision of Dr. Md. Shamsul Arefin, Assistant Professor, on May 17, 2024. The project addressed fish deficiency through sustainable production methods, supporting SDG 14: Life Below Water. It reflects BUBT's dedication to sustainability and innovative research.



























## **LIFE ON LAND**







#### PCF-SPR Sensor for Drink Detection

This study investigates the application of a PCF-SPR sensor for detecting carbonation and alcohol levels in carbonated beverages. The sensor design is optimized using the Finite Element Method (FEM), with Random Forest (RF) enhancing its sensitivity. The sensor achieved a sensitivity of 22,000 nm/RIU and reduced computational overhead by 93% compared to traditional methods. This novel approach provides a comprehensive solution for beverage quality control, supporting sustainable technology and regulatory compliance in the food and beverage industry.

#### Smart Water Metering System for Bangladesh

This study proposes a smart water metering system for Dhaka, Bangladesh, to address challenges like inaccurate readings and water misallocation. By integrating IoT and machine learning, the system enables wireless data transmission and real-time monitoring with a mobile app for users. Five transmission methods (Wi-Fi, Bluetooth, LoRa, Ethernet, GSM) ensure adaptability. Features like tamper prevention and solar-powered backup ensure continuous service. This innovative system enhances water management, improves transparency, and supports sustainable development.

#### **EVENTS**



#### ■Educational Expedition on Sundarbans

In an inspiring effort to green the BUBT campus, a group of researchers undertook an educational expedition to the Sundarbans on September 19, 2024. The objective was to study the world's largest mangrove forest, gaining first-hand insights into its complex ecosystem, the resilience of native species, and the importance of biodiversity. The knowledge and experiences gathered from this visit are now being applied to enhance the natural ecosystem across the university grounds, particularly at the BUBT Sports Complex, transforming the campus into a living laboratory for sustainability and environmental learning.



























15 LIFE ON LAND



## **LIFE ON LAND**





#### ■ Tree Plantation Program 2024

The Bangladesh University of Business and Technology (BUBT) organized a Tree Plantation Program on March 17, 2024, promoting SDG 15: Life on Land. The initiative aimed to restore ecosystems and protect biodiversity by planting forest, fruit, and medicinal trees. Attended by university officials, faculty, and students, the program reflected BUBT's commitment to a greener and more sustainable future.



#### ■ World Environment Day 2024

The Bangladesh University of Business and Technology (BUBT) organized a Tree Plantation Program on March 17, 2024, promoting SDG 15: Life on Land. The initiative aimed to restore ecosystems and protect biodiversity by planting forest, fruit, and medicinal trees. Attended by university officials, faculty, and students, the program reflected BUBT's commitment to a greener and more sustainable future.

































## PEACE, JUSTICE AND STRONG INSTITUTIONS







#### Bengali Cyberbullying Detection and Gender Bias Analysis

This study presents a Transformer-based multi-task learning framework for detecting, classifying, and analyzing gender bias in Bengali cyberbullying. The model processes pre-cleaned and augmented data to ensure linguistic relevance. It surpasses traditional models, such as Bi-LSTM and CNN, achieving Macro F1-scores of 97.73% (gender classification), 95.31% (categorization), and 98.61% (label detection). By identifying subtle linguistic cues and bias patterns, the proposed system provides a robust and scalable solution to combat Bengali-language cyberbullying across social media platforms.

#### Hybrid Blockchain-Based E-Voting System with Deep Learning & Post-Quantum Cryptography

This research introduces PQHAC-Bchain, a hybrid blockchain-based e-voting system designed to enhance electoral integrity. By integrating DeepFace face recognition for voter identity verification and Post-Quantum Cryptography to protect against quantum attacks, this system ensures secure, auditable, transparent, and privacy-preserving elections. A token-based approach prevents double voting and provides tamper-proof voting records. This system combines blockchain's transparency and the latest cryptographic methods to create a reliable, future-proof solution for electoral integrity in modern democracies.

#### **EVENTS**

#### Martyrs' Intellectuals Day



On December 14, 2024, Bangladesh University of Business and Technology (BUBT) commemorated Shaheed Buddhijibi Day, honoring the martyred intellectuals with deep respect. A mourning rally was held, joined by faculty, staff, and students, starting from the campus and ending at the Mirpur Shaheed Buddhijibi Memorial.

## A prayer session in memory of the martyred students

On September 18, 2024, BUBT held a prayer session in memory of students martyred or injured in the anti-discrimination movement and those killed in a recent road accident. The event included Quran recitation and speeches by university officials, families, and classmates, with prayers for the departed and the injured.



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## PEACE, JUSTICE AND STRONG INSTITUTIONS





#### Prayer Gathering in Memory of Late Mr. Md. Alamgir Kabir, Assistant Professor, EEE Department, BUBT

A prayer gathering was held on March 10, 2024, at BUBT International Conference Hall for the eternal peace of the soul of the late Mr. Md. Alamgir Kabir, Assistant Professor of the EEE Department, BUBT, who passed away suddenly on March 8, 2024. The event took place after Asr prayers.

#### Champion in the "Debate for Democracy" Competition

BUBT's team won the shadow parliament competition, receiving trophies, crests, and certificates. Local Government Minister Md. Tajul Islam said corruption exists in all sectors, making development work challenging. He stressed the need to reduce corruption and make local government positions honorable to ensure fair elections.



#### Martyrs' Day and International Mother Language Day 2024

On 21 February 2024, BUBT observed Great Martyrs' Day and International Mother Language Day with a morning rally, tribute at the Shaheed Minar, and a discussion session. The event was attended by the Vice-Chancellor Prof. Dr. Md. Fayyaz Khan, Pro-Vice-Chancellor Prof. Dr. Md. Ali Noor, faculty, students, and staff, and featured speeches on the Language Movement and its role in Bangladesh's independence. The program concluded successfully with active participation from all, celebrating the significance of the language movement and national heritage.































## PARTNERSHIPS FOR THE GOALS







#### Transforming HRM to Green HRM: A Just Transition Approach

This study explores the transition of Human Resource Management (HRM) into Green HRM (GHRM) within the context of Just Transition (JT) Theory. As environmental concerns rise, organizations are encouraged to adopt sustainable practices while striking a balance between business goals. The paper proposes a new framework for GHRM, emphasizing four governance measures: economic diversification, coalition building, government support, and specialized financing. It provides theoretical and managerial insights on how adopting GHRM can drive sustainability and organizational resilienc.

#### Enhancing Banking Performance through RegTech: Cost, Sustainability & Profitability

This study explores the impact of Regulatory Technology (RegTech) adoption on cost reduction, sustainability, and profitability in Bangladesh's banking sector. Using Structural Equation Modeling (SEM), the research identifies significant effects of compliance, transaction monitoring, and risk management on cost reduction, while anti-money laundering and risk management enhance sustainability. The study also highlights how these technologies indirectly influence profitability through improved operational efficiency. These findings offer valuable insights for banking institutions and policymakers aiming to optimize performance through RegTech.

#### **EVENTS**

#### Robi Axiata Limited



The MoU between Bangladesh University of Business and Technology (BUBT) and Robi Axiata Limited will facilitate low cost high-speed internet data for the students of BUBT.



#### ■ Creative IT Insti-

BUBT signed MoU with Creative IT Institute to build up a good corporate relation, IT skill development, IT knowledge sharing, Job placement and Internship placement between these two renowned organizations





























## **PARTNERSHIPS FOR THE GOALS**





#### Nohor Foundation

BUBT Social Welfare Club signed a Memorandum of Understanding (MoU) with Nohor Foundation to promote disability inclusion and equal opportunities through joint events, training, awareness programs, and volunteer initiatives. BUBT Social Welfare Club's volunteers will also have the opportunity to join Nohor Foundation as interns or volunteers. Nohor Foundation works with disabled people to achieve economic independence. Through this partnership, they will collaborate with BUBT Social Welfare Club on training, awareness programs, and joint initiatives that create lasting social value.

#### Central Queensland University (CQU), Austral-

A memorandum of understanding (MOU) between Central Queensland University (CQU), Australia and Bangladesh University of Business and Technology (BUBT) was signed for academic and research collaborations between the two universities. Initially, five faculty members of BUBT will start their Ph.D program with CQU from July 2019. Subsequent programs to follow are joint research projects, conferences, seminars and workshops as well as faculty and student exchange programs.



#### University of Wollongong, Australia

The Department of Electrical and Electronic Engineering (EEE) of BUBT and University of Wollongong, Australia signed a MoU regarding student exchange program. The goal was that students of BUBT have to study two years at BUBT and another two years at UOW, Australia and the certificate will be issued by UOW, Australia.



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