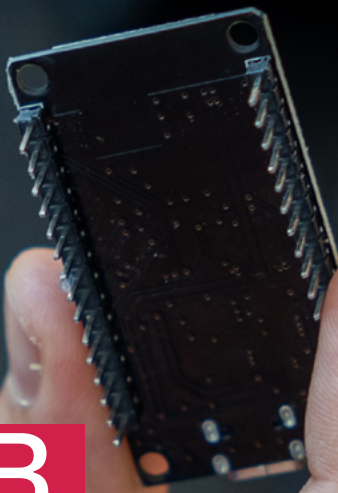




UTB PROJECTS EXPO

A Showcase of
Innovation, Research,
Technology, and
Entrepreneurship

UTB PROJECTS EXPO

A Showcase of
Innovation, Research,
Technology, and
Entrepreneurship

In the presence of

H.E. Dr. Diana Abdulkarim Aljahrami

Secretary General of the Higher Education Council

 **University of
Technology
Bahrain**
جامعة البحرين للتكنولوجيا



UTB PROJECTS EXPO

A Showcase of
Innovation, Research,
Technology, and
Entrepreneurship

 **University of
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جامعة البحرين للتكنولوجيا

Event Programme

11:30 – 12:00 PM	Arrival & Welcome
12:00 – 12:10 PM	Opening Remarks Dr. Hasan Almulla, UTB President
12:10 – 12:20 PM	Innovation Talk Aida Al Mudaifa, Founder of Early Risers
12:20 – 12:30 PM	Innovation Talk Eman Daabel, Head of Strategy and Innovation, BBK
12:30 – 12:45 PM	Winners Awards
12:45 – 1:00 PM	Token of Appreciation
01:00 – 2:00 PM	Project Expo Tour

About the UTB Projects Expo

The UTB Projects Expo marks the evolution of UTB's Entrepreneurship Development Programme (EDP), previously organised by the College of Administrative and Financial Sciences each trimester. Building on its success, the Expo has expanded into a university-wide showcase featuring projects from the College of Administrative and Financial Sciences, College of Computer Studies, and College of Engineering. It also proudly features the projects developed by the first graduating cohorts of UTB's newer programmes, including BSAF, BSIT, and BSEnE.

From entrepreneurship and digital innovation to artificial intelligence, cybersecurity, automation, renewable energy, and sustainability, the Expo highlights how UTB students are transforming ideas into practical solutions that support Bahrain Economic Vision 2030, industry needs, and the United Nations Sustainable Development Goals (SDGs).

The event celebrates the standards, creativity, and innovative spirit of UTB's future business leaders, technologists, engineers, entrepreneurs, and inventors.

Whether you are a future innovator seeking inspiration, an industry representative looking for practical solutions, or an expert interested in collaboration, we invite you to discover the talent and innovation shaping the future at UTB.

At UTB, every great achievement begins with inspiration.



From what
inspires you
to what you'll
inspire next_

Message from the President



Welcome to the UTB Projects Expo, a celebration of innovation, applied research, and student achievement at the University of Technology Bahrain.

This Expo showcases projects across entrepreneurship, artificial intelligence, cybersecurity, sustainability, renewable energy, automation, and digital transformation, demonstrating innovative solutions to industry challenges and emerging societal needs.

The projects featured reflect UTB's commitment to technology-driven education, research excellence, and strong industry collaboration. Through project-based learning, our students are developing practical, future-focused solutions that support sustainable development, drive economic growth, and create positive impact.

I congratulate our students and thank our faculty members and industry partners for their continued support in shaping the next generation of innovators and future-ready graduates.

Dr Hasan Almulla
University President

At a Glance

40+

Projects

100+

Innovators

3

Colleges

1

Vision for
Innovation

Featuring:

- Artificial Intelligence
- Cybersecurity
- Sustainability
- Renewable Energy
- Automation & Robotics
- Entrepreneurship
- Digital Transformation



College of Administrative and Financial Sciences (CAFS)

Entrepreneurship and Digital Innovation_

The College develops future business leaders, entrepreneurs, and digital innovators through industry-focused learning and practical experience.

The projects featured in this section showcase innovative business ideas, digital solutions, and entrepreneurial ventures designed to address real-world challenges.

Bachelor's Programmes

- Bachelor of Science in Business Informatics (BSBI)
- Bachelor of Science in International Business (BSIB)
- Bachelor of Science in Accounting & Finance (BSAF)

Innovation Showcase

- PLANOVA
- BrewGo
- Daulat AI
- Harvest Hub
- Royal Brew Cart
- Namq
- BOXHOT
- Tint Atelier
- Shining Stars
- The Role of IT Auditing in Preventing Financial Fraud
- The Impact of FinTech Adoption on the Financial Performance of Commercial Banks in Bahrain
- The Impact of Artificial Intelligence on Modern Accounting
- Shariah-Compliant Buy Now, Pay Later (BNPL) Systems in Bahrain

PLANOVA

It is a digital event-planning platform that connects customers with trusted vendors through a single marketplace, simplifying event organisation while supporting local businesses.

The Challenge

Event planning often involves multiple vendors, disconnected communication channels, and time-consuming coordination.

Solution Highlights

- Digital Vendor Marketplace
- Event Planning Automation
- Customer Transparency
- Centralised Vendor Discovery
- Support for Local SMEs

Industry Relevance

Event Management • Digital Commerce • Marketplace Platforms

Sustainability Impact

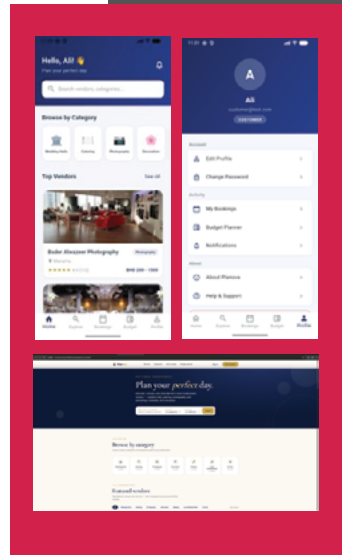


Innovator:

Ali Mohamed AlMutaweh

Programme:

Bachelor of Science in
Business Informatics (BSBI)



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BrewGo

It is a digital coffee-ordering platform that enables customers to preorder, collect, or receive their favourite beverages conveniently while supporting local cafés through increased visibility and customer reach.

The Challenge

Coffee lovers often experience long waiting times, while cafés face challenges in managing customer flow and expanding their market presence.

Solution Highlights

- Pre-Ordering Functionality
- Quick Collection and Delivery
- Enhanced Customer Convenience
- Increased Visibility for Local Cafés
- User-Friendly Digital Platform

Industry Relevance

Food & Beverage • E-Commerce • Digital Services

Sustainability Impact



Innovator:

Ahmed Mahmood Baqer

Programme:

Bachelor of Science in
Business Informatics (BSBI)

University of
Technology
Bahrain
جامعة البحرين للتكنولوجيا

Daulat AI

It is an intelligent customer support platform designed to help businesses improve response times and customer satisfaction through AI-powered communication and engagement solutions.

The Challenge

Businesses often struggle to respond to customer enquiries efficiently, resulting in delayed communication and reduced customer satisfaction.

Solution Highlights

- AI-Powered Customer Support
- Faster Response Times
- Enhanced Customer Engagement
- Business Automation Tools
- Scalable Communication Solutions

Industry Relevance

Artificial Intelligence • Customer Experience • Business Technology

Sustainability Impact

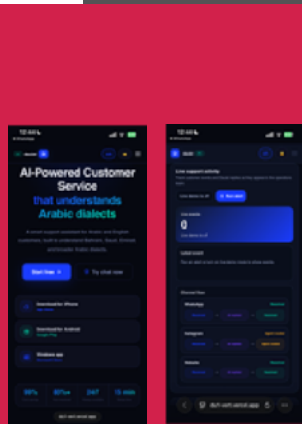


Innovator:

Ali Abdulmuneim Marzooq
Dana Khaldoun Kalbounah

Programme:

Bachelor of Science in
Business Informatics (BSBI)



University of
Technology
Bahrain
جامعة البحرين للتكنولوجيا

Harvest Hub

It is a digital marketplace designed to connect local farmers with consumers and businesses, supporting Bahrain's agricultural sector through improved accessibility, food distribution, and market opportunities.

The Challenge

Local farmers often face difficulties accessing wider markets, while consumers seek convenient access to fresh and locally sourced produce.

Solution Highlights

- Agricultural Marketplace Platform
- Farmer-to-Consumer Connectivity
- Support for Food Security
- Local Produce Distribution
- Digital Agriculture Innovation

Industry Relevance

Agriculture • Food Security • Digital Commerce

Sustainability Impact

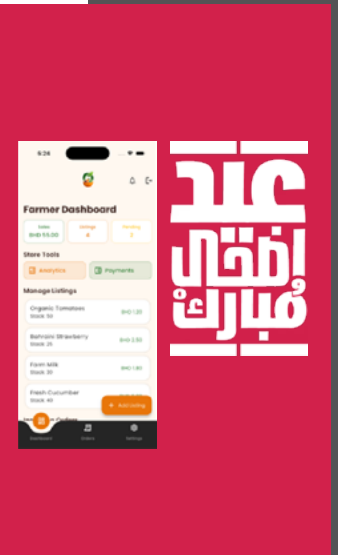


Innovator:

Hend Abdulla Al Rowaiei
Sayed Feras Jaber Mohamed
Zainab Ibrahim Al Dhahi

Programme:

Bachelor of Science in
Business Informatics (BSBI)



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Technology
Bahrain
جامعة البحرين للتكنولوجيا

Royal Brew Cart

It is a premium mobile coffee service that delivers café-quality beverages and hospitality experiences directly to corporate events, gatherings, and community occasions across Bahrain.

The Challenge

Customers increasingly seek high-quality, convenient catering experiences that combine premium products with exceptional service delivery.

Solution Highlights

- Mobile Coffee Service
- Premium Hospitality Experience
- Event Catering Solutions
- Customer-Centred Service Delivery
- Scalable Business Model

Industry Relevance

Hospitality • Food & Beverage • Event Services

Sustainability Impact



Innovators:

Ahmed Abdulmajeed Hasan
Ebrahim Fuad Ebrahim
Ibrahim Nazir
Redha Basil Redha

Programme:

Bachelor of Science in
International Business (BSIB)



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جامعة البحرين للتكنولوجيا

Namq

It is a personalised gifting platform that offers curated gifting solutions designed to simplify gift selection while promoting creativity, personalisation, and local craftsmanship.

The Challenge

Consumers often struggle to find unique, personalised gifts that reflect individual preferences while supporting local artisans and businesses.

Solution Highlights

- Personalised Gifting Solutions
- Curated Gift Collections
- Support for Local Artisans
- Customer-Centric User Experience
- Scalable E-Commerce Platform

Industry Relevance

Retail • E-Commerce • Creative Industries

Sustainability Impact



Innovators:

Ali Ahmed Haji Akbar
Ali Ebrahim Mohamed Ali Kadhem
Hamed Mirza Jasim Ahmed,
Assam Adil
Yaseen Sayed Abduljalil

Programme:

Bachelor of Science in
International Business (BSIB)



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جامعة البحرين للتكنولوجيا

BOXHOT

It is a portable food-heating solution designed to help workers enjoy hot, home-cooked meals conveniently while promoting healthier eating habits and reducing food packaging waste.

The Challenge

Many workers rely on cold meals or disposable food packaging due to limited access to convenient foodheating solutions during working hours.

Solution Highlights

- Portable Food Heating Technology
- Healthier Meal Consumption
- Reduced Plastic Waste
- Cost-Effective Food Solution
- Worker-Focused Design

Industry Relevance

Consumer Products • Food Technology
• Sustainable Living

Sustainability Impact



Innovators:

Dalal Adnan Ibrahim Salem
Salman Waleed Al Latif Rashed Jasim
Haidar Mortadah H
Yusuf Yaqoob Yusuf Husain Yusuf

Programme:

Bachelor of Science
in International Business



University of
Technology
Bahrain
جامعة البحرين للتكنولوجيا

Tint Atelier

It is an innovative business concept focused on delivering creative, personalised products and services that combine craftsmanship, aesthetics, and customer experience.

The Challenge

Consumers increasingly seek customised products that reflect their personal identity and preferences while maintaining quality and uniqueness.

Solution Highlights

- Personalised Product Solutions
- Customer-Centred Design
- Creative Branding Approach
- Market Differentiation
- Value-Added Customer Experience

Industry Relevance

Creative Industries • Retail •
Entrepreneurship

Sustainability Impact



Innovators:

Fatema Sayed Naser
Huda Mohamed Jawad Hasan Alshaikh
Jood Ebrahim Abdulaziz Husain

Programme:

Bachelor of Science in
International Business (BSIB)

University of
Technology
Bahrain
جامعة البحرين للتكنولوجيا

Shining Stars

It is a specialised centre dedicated to providing educational, therapeutic, and developmental support services for children with special needs, promoting inclusion, independence, and community integration.

The Challenge

Many children with special needs require access to specialised educational and developmental support services to maximise their potential and quality of life..

Solution Highlights

- Inclusive Learning Environment
- Therapeutic Support Services
- Life Skills Development
- Individualised Educational Programmes
- Community Integration Focus

Industry Relevance

Education • Healthcare • Social Development

Sustainability Impact



Innovator:

Maysa Husain Subhi Deeb

Programme:

Bachelor of Science in
International Business (BSIB)



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The Role of IT Auditing in Preventing Financial Fraud

This research explores how IT auditing strengthens internal controls and helps organisations reduce financial fraud risks within Bahrain's banking and telecommunications sectors.

The Challenge

Despite significant investment in technology and security controls, financial fraud remains a persistent challenge. Organisations need effective IT audit practices to identify weaknesses and improve fraud prevention measures.

Solution Highlights

- IT Controls Assessment
- Fraud Prevention Analysis
- Banking and Telecommunications
- Comparison
- Risk Management Recommendations

Industry Relevance

Accounting • Auditing •
Information Technology • Banking •
Telecommunications

Sustainability Impact



Researchers:

Isa Mohamed Isa Ali Hasan Alnainoon
Rashed Emam Bakhsh Rashed Mohamed Jalal
Ahmed Abdulnabi Naser Salman Ahmed Sh. Naser

Programme:

Bachelor of Science in
Accounting and Finance (BSAF)



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The Impact of FinTech Adoption on the Financial Performance of Commercial Banks in Bahrain

This research examines how digital technologies are transforming Bahrain's banking sector, enhancing efficiency, profitability, and customer experience while supporting long-term financial growth.

The Challenge

Commercial banks face increasing pressure to modernise services, improve operational efficiency, and remain competitive in a rapidly evolving digital financial landscape.

Solution Highlights

- FinTech Adoption Analysis
- Digital Banking Innovation
- Financial Performance Evaluation
- Operational Efficiency Assessment
- Customer Experience Enhancement
- Banking Sector Growth Insights

Industry Relevance

Banking • FinTech • Digital Finance • Financial Services

Sustainability Impact



Researcher:

Mohamed Jaafar Hamza Ebrahim Ahmed

Programme:

Bachelor of Science in
Accounting and Finance (BSAF)

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Bahrain**
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The Impact of Artificial Intelligence on Modern Accounting

This research explores how AI is transforming accounting practices in Bahrain, enhancing efficiency, data processing, auditing, and decision-making while reshaping the skills required of future accounting professionals.

The Challenge

As AI adoption increases across the financial sector, accounting professionals and educators must adapt to new technologies, changing job requirements, and evolving industry expectations.

Solution Highlights

- AI Impact Assessment in Accounting
- Analysis of Key Accounting Functions
- AI Readiness Evaluation
- Data-Driven Research Findings
- Curriculum Development Insights
- Workforce Transformation
- Recommendations

Industry Relevance

Accounting • Finance • Artificial
Intelligence • Financial Services

Sustainability Impact



Researcher:

Mohammed Aaquid Mohammed Hasin Vaid

Programme:

Bachelor of Science in
Accounting and Finance (BSAF)

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This research examines how BNPL services can align with Islamic finance principles while supporting innovation, consumer protection, and sustainable growth in Bahrain's financial sector.

The Challenge

The rapid growth of BNPL services raises concerns about Shariah compliance, fee transparency, consumer protection, and responsible borrowing practices.

Solution Highlights

- Shariah Compliance Assessment
- AAOIFI Standards Evaluation
- BNPL Provider Analysis
- Murabaha-Based Financing Models
- Consumer Protection Framework
- Regulatory Recommendations

Industry Relevance

Islamic Finance • FinTech • Digital Payments

Sustainability Impact



Researcher:

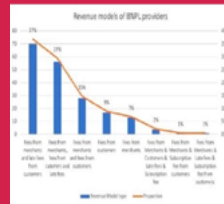
Nadeen Alaaddin M. Zeidan

Programme:

Bachelor of Science in
Accounting and Finance (BSAF)



Source	2011	2012	2013
State	100	100	100
Federal	120	120	120
County	20	20	20
City	30	30	30
Local	-	0	0
Private	-	0	0
Non-Profit	-	-	0
Interest	0	0	0
Donor	20	20	20
Agent	20	20	20
Investment	0	0	0
Other	0	0	0
Total	150	150	150



University of
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Bahrain
جامعة البحرين للتكنولوجيا

Be the Next_

business leaders,
entrepreneurs, and
digital innovators

A man with a beard, wearing a grey sweater over a white collared shirt and a blue lanyard, is looking at a laptop in a server room. The background shows rows of server racks with blue lighting.

College of Computer Studies (CCS)

Artificial Intelligence, Cybersecurity and Digital Transformation_

The College prepares future technology professionals through innovative, industry-focused learning and practical experience

The projects featured in this section showcase intelligent digital solutions in artificial intelligence, cybersecurity, software development, data analytics, and emerging

technologies designed to address real-world challenges across business, healthcare, education, and industry.

Bachelor's Programmes

- Bachelor of Science in Computer Science (BSCS)
- Bachelor of Science in Information Technology (BSIT)

Major Tracks

- Applications Development
- Data Analytics and Artificial Intelligence
- Networking and Cybersecurity

Innovation Showcase

- UTB AR Indoor Navigation System
- Cyber Guardian
- Vulnerability Scanner: An Intelligent Tool for Security Flaw Detection
- Hospital Readmission Risk Prediction System
- Inventory Management System with Dashboard Analytics and Demand Forecasting
- Linkless: Offline Digital Payment System
- AI-Based E-mail Phishing Detection System Using Machine Learning
- Bahrain Healthy Habits Management Mobile Application
- AI-Based E-mail Phishing System
- Smart Timetable Generator for eMAada: A Chrome Extension for Optimised Course Registration
- AI-Enhanced Honeypot Framework for Zero-Day Attack Detection with Real-Time Threat
- Intelligence and Security Analytics Dashboard

UTB AR Indoor Navigation System

An augmented reality navigation solution designed to help students, staff, and visitors navigate the UTB campus more efficiently through real-time visual guidance.

The Challenge

Navigating large educational facilities can be challenging for new students and visitors.

Solution Highlights

- Augmented Reality Navigation
- Smart Campus Experience
- Real-Time Wayfinding
- Enhanced Accessibility

Industry Relevance

Educational Technology • Smart Campuses • Augmented Reality

Sustainability Impact

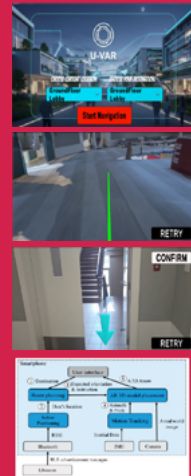


Innovators:

Ahmed Waleed Abuzaid
Muhammed Nizin
John Bernard Rudas Morana

Programme:

Bachelor of Science in
Computer Science (BSCS)



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Cyber Guardian

A cybersecurity platform developed to enhance digital protection through intelligent threat monitoring, detection, and awareness capabilities.

The Challenge

Organisations increasingly face sophisticated cyber threats that require proactive security measures.

Solution Highlights

- Threat Monitoring
- Cyber Risk Detection
- Security Awareness
- Real-Time Alerts

Industry Relevance

Cybersecurity • Information Security •
Risk Management

Sustainability Impact



Innovators:

Sayed Hussain Sayed Ali
Sayed Hassan Sayed Ali
Ayesha Jabeen Shujahat Ali

Programme:

Bachelor of Science in
Computer Science (BSCS)

 **University of
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Bahrain**
جامعة البحرين للتكنولوجيا

Vulnerability Scanner: An Intelligent Tool for Security Flaw Detection

An intelligent security assessment tool that enables organisations to identify vulnerabilities and strengthen their cyber defence posture before threats can be exploited.

The Challenge

Many organisations struggle to detect system vulnerabilities before cyber attackers exploit them.

Solution Highlights

- Automated Vulnerability Detection
- Security Risk Assessment
- Actionable Security Insights
- Improved Cyber Defence

Industry Relevance

Cybersecurity • Information Technology
• Compliance

Sustainability Impact



Innovators:

Ali Abdulrahman Alahmed
Ebrahim Tareq Ebrahim
Turki Raed
Zainab Redha Ahmed (BSCS)

Programme:

Bachelor of Science in
Information Technology (BSIT)

 **University of
Technology
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جامعة البحرين للتكنولوجيا

Hospital Readmission Risk Prediction System

A predictive analytics system that identifies patients at high risk of hospital readmission, enabling healthcare providers to improve preventative care and patient outcomes.

The Challenge

Organisations increasingly face sophisticated cyber threats that require proactive security measures.

Solution Highlights

- Threat Monitoring
- Cyber Risk Detection
- Security Awareness
- Real-Time Alerts

Industry Relevance

Cybersecurity • Information Security •
Risk Management

Sustainability Impact



Innovators:

Muhammad Talha
Ayesha Ansari

Programme:

Bachelor of Science in
Computer Science (BSCS)



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جامعة البحرين للتكنولوجيا

Inventory Management System with Dashboard Analytics and Demand

An intelligent inventory management platform that combines dashboard analytics and demand forecasting to optimise stock levels and support business decision-making.

The Challenge

Businesses often face inventory inefficiencies, stock shortages, and forecasting difficulties.

Solution Highlights

- Demand Forecasting
- Analytics Dashboard
- Inventory Tracking
- Data-Driven Decisions

Industry Relevance

Retail Technology • Supply Chain • Business Analytics

Sustainability Impact



Innovators:

Khalifa Mohamed Naeem
Khawla Abdullatif Omar

Programme:

Bachelor of Science in
Computer Science (BSCS)

 **University of
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Bahrain**
جامعة البحرين للتكنولوجيا

Linkless: Offline Digital Payment System

An offline digital payment system that enables secure transactions in low-connectivity environments, improving financial accessibility and reliability

The Challenge

Digital payment systems often depend on stable internet connectivity, limiting accessibility in certain situations.

Solution Highlights

- Offline Transactions
- Secure Payments
- Financial Inclusion
- Peer-to-Peer Transfers

Industry Relevance

FinTech • Digital Payments • Financial Services

Sustainability Impact

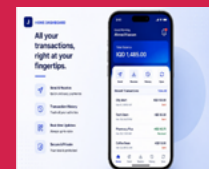


Innovators:

Abdalla Mohamed Abusin
Haya Hamad Aldoseri
Eman Saad

Programme

Bachelor of Science in
Information Technology (BSIT)



 **University of
Technology
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AI-Based E-mail Phishing Detection System Using Machine Learning

A machine-learning solution designed to detect phishing emails and enhance digital security by identifying malicious patterns and suspicious communications.

The Challenge

Phishing attacks continue to be one of the most common cybersecurity threats affecting individuals and organisations.

Solution Highlights

- Machine Learning Detection
- Threat Identification
- E-mail Classification
- Security Alerts

Industry Relevance

Cybersecurity • Artificial Intelligence
• Information Security

Sustainability Impact



Innovators:

Isa Ahmed Isa
Ali Qasim Ali

Programme:

Bachelor of Science in
Computer Science (BSCS)

 **University of
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Bahrain**
جامعة البحرين للتكنولوجيا

Bahrain Healthy Habits Management Mobile Application

A mobile application that encourages healthier lifestyles through habit tracking, goal setting, monitoring, and personalised recommendations.

The Challenge

Many individuals struggle to maintain healthy routines and monitor lifestyle habits consistently.

Solution Highlights

- Habit Tracking
- Goal Setting
- Personalised Recommendations
- Wellness Monitoring

Industry Relevance

Health Technology • Mobile
Applications • Digital Wellness

Sustainability Impact



Innovators:

Ali Farooq
Ebrahim Waleed

Programme:

Bachelor of Science in
Computer Science (BSCS)

 **University of
Technology
Bahrain**
جامعة البحرين للتكنولوجيا

AI-Based E-mail Phishing System

An AI-driven phishing detection system that automatically analyses and classifies suspicious emails to strengthen organisational cybersecurity resilience.

The Challenge

Organisations require intelligent tools capable of detecting increasingly sophisticated phishing attempts.

Solution Highlights

- AI-Powered Detection
- Threat Classification
- Risk Assessment
- Automated Alerts

Industry Relevance

Cybersecurity • Artificial Intelligence
• Enterprise Security

Sustainability Impact



Innovators:

Jenan Jaffar
Fatema Matar
Sara Mohamed Husain

Programme:

Bachelor of Science in
Information Technology (BSIT)

 **University of
Technology
Bahrain**
جامعة البحرين للتكنولوجيا

Smart Timetable Generator for eMada: A Chrome Extension for Optimised Course Registration

A Chrome extension that helps students create optimised class schedules by considering course availability, preferences, and timetable constraints.

The Challenge

Course registration can be complex, making it difficult for students to create efficient class schedules.

Solution Highlights

- Automated Timetable Creation
- Schedule Optimisation
- Registration Support
- User-Friendly Interface

Industry Relevance

Educational Technology • Software
Development • Student Success
Solutions

Sustainability Impact



Innovators:

Abdallah Tantawy Megwar (BSCS)
Issa Mohamed Issa (BSIT)

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AI-Enhanced Honeypot Framework for Zero-Day Attack Detection with Real-Time Threat Intelligence and Security Analytics Dashboard

An advanced cybersecurity framework that combines AI-enhanced honeypot technology, threat intelligence, and security analytics to detect emerging cyber threats and zero-day attacks.

The Challenge

Traditional security systems often struggle to identify previously unknown or rapidly evolving cyber threats.

Solution Highlights

- Zero-Day Threat Detection
- AI-Enhanced Honeypot Technology
- Real-Time Threat Intelligence
- Security Analytics Dashboard

Industry Relevance

Cybersecurity • Artificial Intelligence

- Threat Intelligence
- Information Security

Sustainability Impact



Innovators:

Mohamed Zuhair
Ahmed Yusuf
Mustapha Mohamed
Mohammed Mahdi

Programme:

Bachelor of Science in
Information Technology (BSIT)

 University of
Technology
Bahrain
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Be the Next_
problem solvers
creating solutions
for tomorrow's
digital world



College of Engineering (COE)

Sustainable Engineering and Smart Technologies_

The College of Engineering prepares future engineers, innovators, and problem-solvers through hands-on learning, research, and industry-oriented practice.

The projects featured in this section showcase innovative solutions in

robotics, automation, renewable energy, environmental engineering, smart manufacturing, and sustainable technologies, addressing real-world challenges across industry, infrastructure, energy, water, and environmental sustainability.

Bachelor's Programmes

- Bachelor of Science in Mechatronics Engineering (BSME)
- Bachelor of Science in Informatics Engineering (BSIE)
- Bachelor of Science in Environmental Engineering (BSEnE)



Innovation Showcase

- AI-Driven Mobile Robot for Smart Warehouse Logistics
- AI-Driven Solar-Wind Hybrid Autonomous Vehicle Protection and Smart Utility System
- Design and Implementation of an RF-Controlled Submarine with Live Video and Tracking Capability
- NeuroBridge: A Multimodal Bio-Signal Assistive Neuroprosthetic for Motor-Impaired Individuals
- AI-Powered Educational Robot for the Next Generation of Smart Learning
- Emissions Prioritisation from Municipal Solid Waste Incineration
- Solar-Powered Smart Soil Testing Device for Sustainable Agriculture
- Wastewater Monitoring Sensing System
- Valorisation of Food Waste for Sustainable Energy Recovery
- Production of Biofuel from Algal Biomass through Fermentation Technology
- PLC-Controlled Cylindrical Robot for Height-Based Product Sorting
- Design and Development of a Solar-Powered Seawater Desalination System with Digital Monitoring and Irrigation Application
- Design and Development of a Maze Fire Detection and Response Robot
- Design and Development of an Autonomous Mobile Robot (AMR) for Warehouse Management Systems
- Atmospheric Water Condensation System

AI-Driven Mobile Robot for Smart Warehouse Logistics

An intelligent mobile robotic system designed to automate warehouse operations through artificial intelligence, sensing, and autonomous navigation technologies, improving logistics efficiency and operational performance.

The Challenge

Warehouses require smarter automation solutions to improve productivity, safety, and inventory movement.

Solution Highlights

- AI-Driven Navigation
- Smart Warehouse Automation
- Autonomous Operation
- Real-Time Decision-Making

Industry Relevance

Logistics • Smart Manufacturing
• Industry 4.0 • Robotics

Sustainability Impact



Innovators:

Jassim Mohamed Malalla
Nasser Ali Aldosari
Mohamed Aqeel Salman
Mohammed Abdulredha Algassab

Programme:

Bachelor of Science in
Mechatronics Engineering (BSME)



 **University of
Technology
Bahrain**
جامعة البحرين للتكنولوجيا

AI-Driven Solar-Wind Hybrid Autonomous Vehicle Protection and Smart Utility System

A renewable-energy-powered intelligent protection and monitoring system that combines solar and wind technologies with IoT-based control and adaptive deployment capabilities.

The Challenge

Critical infrastructure requires sustainable and resilient protection systems supported by reliable energy sources.

Solution Highlights

- Hybrid Renewable Energy System
- IoT Monitoring
- Smart Utility Protection
- Autonomous Operation

Industry Relevance

Renewable Energy • Utilities • Smart
Infrastructure

Sustainability Impact



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Design and Implementation of an RF-Controlled Submarine with Live Video and Tracking Capability

A remotely operated underwater vehicle capable of navigation, live video transmission, and real-time tracking for underwater exploration and monitoring applications

The Challenge

Underwater inspection and monitoring often require costly and specialised equipment.

Solution Highlights

- RF-Controlled Navigation
- Live Video Streaming
- Tracking System
- Underwater Monitoring

Industry Relevance

Marine Engineering • Surveillance • Environmental Monitoring

Sustainability Impact



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NeuroBridge: A Multimodal Bio-Signal Assistive Neuroprosthetic for Motor-Impaired Individuals

An assistive neuroprosthetic system that utilises multimodal biosignals to improve mobility, independence, and quality of life for individuals with motor impairments.

The Challenge

Many individuals with motor impairments require accessible technologies that enhance mobility and daily functioning.

Solution Highlights

- Bio-Signal Integration
- Assistive Healthcare Technology
- Neuroprosthetic System
- Human-Centred Design

Industry Relevance

Biomedical Engineering • Healthcare Technology • Assistive Devices

Sustainability Impact



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AI-Powered Educational Robot for the Next Generation of Smart Learning

An AI-enabled educational robot designed to enhance STEM learning through interactive, engaging, and experiential educational experiences.

The Challenge

Students increasingly require innovative learning tools that encourage engagement and practical skill development.

Solution Highlights

- AI Learning Assistant
- Interactive Education
- STEM Learning Support
- Smart Learning Technology

Industry Relevance

Educational Technology • Artificial Intelligence • Robotics

Sustainability Impact



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Emissions Prioritisation from Municipal Solid Waste Incineration

A research-based environmental assessment examining emissions generated by municipal waste incineration to support sustainable waste management strategies.

The Challenge

Waste treatment facilities must minimise environmental emissions while maintaining operational efficiency.

Solution Highlights

- Emissions Analysis
- Environmental Assessment
- Waste Management Insights
- Sustainability Evaluation

Industry Relevance

Environmental Engineering • Waste Management • Sustainability

Sustainability Impact

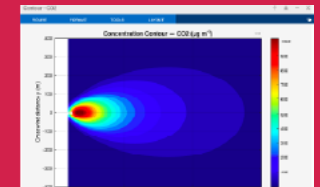
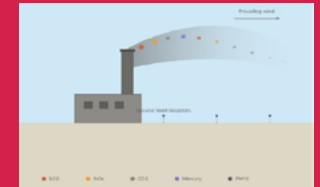


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Solar-Powered Smart Soil Testing Device for Sustainable Agriculture

A solar-powered soil-testing system designed to support precision agriculture by providing data-driven insights into soil health and agricultural productivity.

The Challenge

Farmers require affordable and efficient solutions to monitor soil quality and optimise resource use.

Solution Highlights

- Solar-Powered Operation
- Soil Quality Analysis
- Precision Agriculture
- Sustainable Farming Support

Industry Relevance

Agriculture • Environmental Technology
• Smart Farming

Sustainability Impact

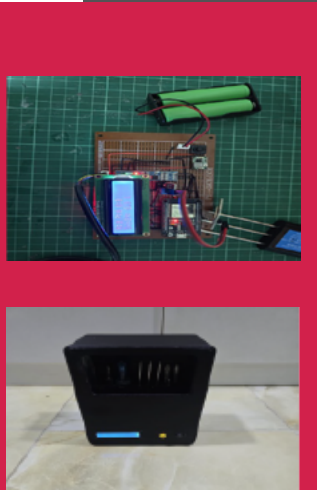


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Wastewater Monitoring Sensing System

An intelligent sensing system developed for monitoring wastewater quality and supporting sustainable water-resource management practices.

The Challenge

Reliable water-quality monitoring is essential for environmental protection and sustainable water management.

Solution Highlights

- Water Quality Monitoring
- Intelligent Sensors
- Data Collection and Analysis
- Environmental Protection

Industry Relevance

Water Management • Environmental
Monitoring • Sustainability

Sustainability Impact



Innovators:

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Valorisation of Food Waste for Sustainable Energy Recovery

A sustainable engineering solution focused on converting food waste into useful energy resources while supporting circular economy initiatives.

The Challenge

Large volumes of food waste contribute to environmental challenges and underutilised energy resources.

Solution Highlights

- Waste-to-Energy Conversion
- Circular Economy Approach
- Sustainable Resource Recovery
- Environmental Impact Reduction

Industry Relevance

Waste Management • Renewable Energy • Sustainability

Sustainability Impact



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Production of Biofuel from Algal Biomass through Fermentation Technology

A renewable energy project investigating the production of biofuel from algal biomass using fermentation technology to support sustainable fuel alternatives.

The Challenge

The growing demand for clean energy requires innovative and sustainable fuel production methods.

Solution Highlights

- Biofuel Production
- Renewable Energy Research
- Algal Biomass Utilisation
- Fermentation Technology

Industry Relevance

Renewable Energy • Bioenergy • Environmental Engineering

Sustainability Impact



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PLC-Controlled Cylindrical Robot for Height-Based Product Sorting

An automated robotic sorting system designed to improve manufacturing productivity through PLC-based control and intelligent product classification.

The Challenge

Industrial facilities require efficient and reliable automated sorting systems to enhance operational performance.

Solution Highlights

- PLC Automation
- Product Sorting System
- Enhanced Productivity
- Industrial Automation

Industry Relevance

Manufacturing • Automation
• Industry 4.0

Sustainability Impact



Innovators:

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Solar-Powered Seawater Desalination System with Digital Monitoring and Irrigation Application

A renewable-energy desalination system that integrates solar power, digital monitoring, and irrigation applications to support sustainable water production.

The Challenge

Growing water demand requires sustainable and energy-efficient desalination technologies.

Solution Highlights

- Solar-Powered Desalination
- Digital Monitoring
- Irrigation Support
- Sustainable Water Production

Industry Relevance

Water Technologies • Renewable
Energy • Agriculture

Sustainability Impact



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Design and Development of a Maze Fire Detection and Response Robot

An autonomous robotic platform designed to detect and respond to fire hazards in complex environments, improving emergency response capabilities.

The Challenge

Emergency response teams require innovative technologies to enhance fire detection and hazard mitigation.

Solution Highlights

- Fire Detection Technology
- Autonomous Navigation
- Emergency Response Support
- Hazard Monitoring

Industry Relevance

Public Safety • Robotics
• Emergency Response

Sustainability Impact



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Design and Development of an Autonomous Mobile Robot (AMR) for Warehouse Management Systems

An autonomous mobile robot designed for warehouse operations, utilising advanced sensing and navigation technologies to support smart logistics environments.

The Challenge

Warehouse operators require intelligent automation solutions to improve efficiency and accuracy.

Solution Highlights

- Autonomous Navigation
- Smart Warehouse Operations
- Advanced Sensing Technologies
- Logistics Automation

Industry Relevance

Logistics • Industry 4.0 • Robotics

Sustainability Impact



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Atmospheric Water Condensation System

A sustainable water-harvesting system that extracts atmospheric moisture and converts it into usable water, helping address freshwater scarcity through innovative engineering.

The Challenge

Many regions face increasing pressure on freshwater resources due to climate and population challenges.

Solution Highlights

- Atmospheric Water Harvesting
- Sustainable Water Generation
- Resource Conservation
- Innovative Engineering Design

Industry Relevance

Environmental Engineering

• Water Technologies • Sustainability

Sustainability Impact



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