

## **Fourth Industrial Revolution**

### **Samar State University (Philippines)**

#### Smart Edubox - A Wireless Sensor Based Educational Service Delivery

Covid19 constitute an unprecedented challenge with a severe impact in every workplace throughout the world. The educational sector was one of the most affected by this pandemic. The policies and protocols for education set-up for students switched from face to face to full online content delivery. Stability of internet connection is very important to get the quality of education be provided to students. But the Samar Province is facing a great challenge on the internet connection which could affect the learning of the students specially for those who are in the far flung areas. A wireless sensor base educational content delivery was proposed to address this problem. A portable low-cost wireless sensor powered by a battery that would be capable to do data processing and data acquisition over a dedicated network of sensors with a varying distance up to, but not limited to 3.22 km. The design will implement an ad-hoc, hot spot or even distribute the portable sensors to the learners so that they can access the network all the time, they don't need to have the internet since they will be using a portable communication framework. Learners can connect using their devices through Bluetooth or Wi-Fi connection, due to their versatility. Wireless sensor networks can be deployed to the concerned areas instead of sending persons to where the students are which could be costly and risky especially during these times.

### **National University of Management (Cambodia)**

#### Blockchain-based App Development

Blockchain-based App Development is a 4-year-long project for the students of NUM's Faculty of Digital Economy. The project aims at serving as a platform for students to put the theoretical foundation of the latest technology, blockchain, learned from their course into practice. Currently four sub-projects are being carried out by the digital economy students. These projects aim at capturing the benefit of blockchain technology to provide digital solutions in the area of digital economy, fintech and smart city management. The project is implemented as part of NUM Digital Economy Lab, which was established in 2019 under the sponsorship of the United Nations Development Programme (UNDP) to serve as a practicable lab for digital economy students. The lab is equipped with modern facilities to support the students to experience edge-cutting technology that is required for their study in the field of digital transformation. The lab also offers a support team to provide consultation to students as their projects carry on, and the team works closely with the students to promote their projects and to ensure satisfactory products to be delivered.

## **Lac Hong University (Vietnam)**

### Using Blockchain for Origin Traceability of Agricultural Products

Consumers usually make their decisions based on the information provided on the packaging. However, for agricultural products, how to know what they get are exactly correct as what are mentioned on the packaging is a really thorny problem. In practice, several standards have been set up to help agricultural businesses and farmers to improve their operational efficiency and ensure their food hygiene and safety. Lac Hong University (LHU) proposed system uses blockchain to automatically collect and store the information for origin traceability. Typically, some devices integrated with proper sensors are used to monitor water supply and growth process while a terminal sensor is used to determine key parameters of the system. Blockchain technology brings transparency, clarity, trustworthiness to the data on the system. Moreover, the management software and customer care service applications built in this project are connected to the blockchain system through smart contracts. These systems are always updated and upgraded, creating convenience and efficiency for consumers, businesses, and managers. Currently the project has been successfully completed in 2020 and transferred to Truong Toan Fishery Group and others in fishery enterprises. It is highly appreciated and satisfied by the enterprises and consumers and transfers to more enterprises in agricultural products.

## **Mariano Marcos State University (Philippines)**

### Transforming MMSU Educational System Toward Industry 4.0

Rapid changes and disruptions in the world of work compel all organizations, including universities, to rethink learning and education. Industrial Revolution 4.0 or Industry 4.0, known as the digital age characterized by big data, artificial intelligence (IA) and Internet of Things (IoT) poses great impact on various sectors and necessitates universities to innovate and shift to new dimensions and approaches in teaching and including how it operationalizes its core functions to become relevant and sustainable. It is in this context that MMSU endeavors to transform holistically toward Industry 4.0, hence, MMSU 4.0. It shall sustain its role as a key driver of development in the northern part of the country by developing the talent pool required by industries in the future. To realize this, MMSU has charted and rolled-out its framework to transform its educational system to respond to the needs of Industry 4.0. The MMSU 4.0 Framework has six major components namely: (1) Adopt new education tools and technologies, (2) Enhance digital governance, (3) develop digital technology, (4) promote industry-university collaboration, (5) upgrade infrastructure, and (6) intensify capacity building and development.

## **Dalian Neusoft University of Information (China)**

### Design and Implementation of Financial Information Management System Based on Big Data

## Platform

The traditional financial information management system has a large system delay in the case of large amount of data, and it is easy to cause data packet loss error in the transmission process. This project studies the design and implementation of financial information management system based on big data platform. This project first describes the logical structure of financial management system based on client / server mode and Oracle as background database. Then, this project uses the theory of software engineering and database, combined with the characteristics of Oracle RDBMS, discusses the implementation method of financial management system. Finally, the approach to financial information integration is discussed. The experimental data show that the system has low system delay and high data accuracy. This project cooperates with Anshan Iron and Steel Company, studies the design and implementation of financial information management system based on big data platform. The development and implementation of LZ - CIMS financial management system reflects the reasonable design of system structure, complete functions, clear function interface and information interface, which conforms to the actual situation and characteristics of Angang Cold Rolling Plant, and realizes the integration of financial information.

## **University for Business and Technology (Kosovo)**

### Smart Ecosystem University Full Digitalization

Since its beginnings UBT has always followed the current technological and socio-economic trends and developments, while in certain situations it has taken the leading role towards future oriented solutions and forward looking initiatives. As per Augmented and Virtual Reality Platform; UBT has been recently implementing 2 projects worthing 30 Million EUR. in Virtual and Augmented Reality technology. This platform allows all faculties (both students and staff) to contribute to the simplifcating and enriching everyday life in terms of research and study. Consequently, the implementation strategy for AVR and the connection of education with the industry occurs as following: Each faculty contributes to the advancement of ICT in the industry using VR and AR industrial projects. New technologies, its applications and the opportunities created by them create a flexible approach to new technological tools which can added value to the whole development towards enriching university's ecosystem. Thus, UBT is devoted to follow all recent trends and to lead up certain dynamics where and when it's necessary.

## **Kookmin University (Korea, Rep.)**

### Digital Innovation Sharing University

Kookmin University focuses on developing a new higher education system for nurturing innovative talents for future automobile design, the most important technology field in the era of

the 4th industrial revolution. Through flexible mutual sharing and cooperation between universities, the university strives to present a new standard of higher education for future automobiles design and development. Kookmin University sets the goal of nurturing innovative talents for future automobiles through communication, cooperation and challenge to build an educational ecosystem without boundaries and create a place of communication for universities, research institutes, industries, and government departments so that they can gather and enhance the capabilities of each institution. Breaking from the traditional method, teachers and industry experts who teach and conduct research in each new technology field gather to develop curriculum and share resources possessed by each university to meet the needs of students and industry. Future goals include improving accessibility between universities participating in the consortium by building an open sharing platform and improving satisfaction by linking various external contents for enabling sharing between universities and the general public.

### **IU International University of Applied Sciences (Germany)**

#### IU AI-driven synthetic teaching support

With over 85,000 students, IU International University of Applied Sciences (IU) is the largest university in Germany. Students can choose between on-campus study, dual study, distance learning and flexible combination models and thus shape their studies in a self-determined way. Machine learning and AI are currently disrupting many industry areas through their versatile applications. IU see important and valuable application in the higher education sector as well, especially when it comes to innovation, scaling and personalization. Therefore, IU is investing in leveraging AI in education towards their vision: "Everybody can access education to grow". IU is building an AI-driven synthetic teaching/coaching support based on NLP (Natural Language Processing) technologies. The AI-driven synthetic teaching/coaching support is based on NLP technologies and comprises the artificial tutoring support, digital coaching services and intelligent teaching services. This project could result in savings of service staff and content production when growing into international markets. In addition to the previously mentioned mass rollout across all IU markets by 2023, the project will explore additional services (use-cases) for the technology, as well as leverage further AI technologies and IT advancements.

### **Chungbuk National University (Korea, Rep.)**

#### Establishing an 'Intelligent Regional Innovation Symbiosis' that leads the 4th Industrial Revolution

There has been a demand for intelligent innovation research that can lead the innovative growth of local industries by utilizing the university's intelligent technology capabilities. Chungbuk National university established symbiotic system(relationship) in intelligent regional innovation. Through the development of smart IT parts and system technology, Chungbuk National university

provided human-centered AI convergence service, vitalized new form of intelligent industry with high value, and expanded its market. Chungbuk National University implemented AI Industrial Convergence Project. Chungbuk National University operated the graduate school master's and doctoral courses in the Department of Industrial Artificial Intelligence for incumbents in industries. In addition, infrastructure has been required to be constructed, such as spaces for research and education, and equipment and facilities for research in areas where companies are concentrated to lead regional industrial innovation. Through three programs (talents training, R&D, regional cooperation) to establish an intelligent regional innovation symbiosis system leading the 4th industrial revolution, it has nurtured cultivate high-quality talents with practical intelligent technology, promoted active technology development, and spread sustainable intelligent regional innovation.

### **Badr University in Cairo (Egypt)**

#### Fourth Industrialization

Badr University in Cairo- Egypt (BUC) is becoming entrepreneurial university in order to address the needs of its own environment, and contribute to regional and national economic development. The transition towards entrepreneurial university does not mean that university becomes less oriented towards research, but that research and educational activities are seen as capital, and university expects to generate an integrated entrepreneurial culture presumes high integration of all university elements around the value dimensions of entrepreneurship (proactivity, innovativeness, readiness to assume risk), and high decentralization of university on the principle of subsidiarity in reacting to changes in the environment. We are now in the Fourth Industrial Revolution which revolutionizes the automation, monitoring, and analysis of supply chains through smart technology. Industry 4.0 is powered by the Industrial Internet of Things (IIoT) and cyber-physical systems –smart, autonomous systems that use computer-based algorithms to monitor and control physical things like machinery, robots, and vehicles. Industry 4.0 makes everything in supply chain “smart” – from smart manufacturing and factories to smart warehousing and logistics and it inter-connects with back-end systems, like enterprises resource planning (ERP), to give companies an unprecedented level of visibility and control. Ultimately, Industry 4.0 is a major part of any company's digital transformation.

### **Seoul School of Integrated Sciences and Technologies (Korea, Rep.)**

#### AI-Big Data MBA

In Korea, demand for the use of AI and big data is increasing not only in the private sector but also in public services such as transportation, disasters, and medical care, but also in all areas. aSSIST's AI-Big Data MBA has been training numerous "practical data scientists" with a solid field-

oriented curriculum and open professor platform to foster data scientists leading the creation of value in the big data era. With digital transformation emerging on a wider scale, aSSIST launched the Big Data MBA program in March 2015 for the first time ever in Korea to help meet the needs for data scientists. The Big Data MBA program has been successful with 185 enrolled students and 117 graduates as of August 2021. Each year sees around 30 students enrolled in the program. The school is developing a new First Leading curriculum and in order to meet the needs of various industries that require experts in big data analysis, global cases of more detailed big data utilization strategies by industry are reflected in educational content and analysis techniques are being updated. The school makes an alliance with research partners from industry. In addition, the school will also diversify the consulting and project-based research activities to provide students more opportunities to have real world experiences. In collaboration with big data analysis experts and strategy experts within the class, the school is providing a platform to discover new business models and develop into startups.

### **Telkom Institute of Technology Purwokerto (Indonesia)**

#### Knowledge Management System Village Innovation Application

Indonesia government is trying to make village expansion aimed at reducing underdeveloped areas. To support the Government's efforts to trigger development acceleration, ITTP create a Village Innovation Knowledge Management System (KMS)-based application. It sought to help produce creative and innovative villages that can add, develop, and enhance the potential of existing villages. The application of village innovation is one form of implementation of the results of applied research that aims to have a positive impact on the Indonesian people, especially rural communities to develop village potential. The village innovation application makes it easy for the village government and the community to develop existing innovations based on the village's potential. So that the village can maximize to become an innovative, creative village, and support the development of the nation. The application has village information, a list of village potentials, village development knowledge, a list of village innovations, village development provisions based on village potentials and innovations.

### **American International University-Bangladesh (Bangladesh)**

#### Hybrid Charging Controller with Regenerative Braking System of an Electric Vehicle

Conventional vehicles with gasoline as fuels emit a high rate of CO<sub>2</sub>. On the other hand, the electric vehicle is an enormous technology where the electric motor is used to run the wheel, which produces less CO<sub>2</sub>. In this project, a smart electric vehicle has been developed, which takes power from the solar photovoltaic (PV) panels available on the roof of the vehicle. The use of a PV system ensures less electricity consumption from the grid. This project also aims to design a

charge controller for an electric automobile and a new regenerative braking mechanism to increase sustainability. This redesigned electric car will have a better charging controller system that can use less power from the facility while combining it with solar power and using regenerative braking technology; it will also generate power to charge the battery while driving. According to the goal, the vehicle's total range will increase, and it will be able to drive for longer periods while emitting zero emissions into the environment. For this project, the all-new regenerative braking mechanism will help to generate some power which will later be used to run the vehicle. The battery will also be charged by solar and power grid. The vehicle will employ all three powers while running, allowing it to cover a greater distance.

### **Florida Gulf Coast University (USA)**

#### Gamifying FGCU's Campus

In Spring 2020, as the US increased and implemented COVID-19 vaccine distribution for citizens of Florida, citizens checked the Department of Health website with vigilance for more information. Fascinated with the layout of the website as much as the information about the response to COVID-19, the Office of Competitive Fellowship (OCF) of Florida Gulf Coast University (FGCU) began to reflect on the various applications of ArcGIS in accord with the institution. For the OCF the confluence of history, public service, and FGCU burgeoned into a vision utilizing GIS to demonstrate the high impact practices of FGCU from a regional and international basis. After informal conversations with colleagues and practice with Knightlabs, the OCF wrote a white paper that established the broad impacts of ArcGIS. This initiated a university-wide ArcGIS Story mapping project. While the Storymapping, ArcGIS, and Knightlabs are innovative in themselves, it is the first in a long-term project to gamify Florida Gulf Coast University's campus and strategic partners throughout the Southwest Florida campus. Ultimately it is the vision to create an application that will be self-sustaining and plan in obsolescence. By utilizing a Structured Query Language (SQL) database FGCU will create an augmented reality to enhance the experience for visitors, students, and faculty at FGCU through Optical Character Recognition technology (OCR) on landmarks instead of QR codes and GIS mapping.

### **University of Liberal Arts Bangladesh (Bangladesh)**

#### Digital Journalism: An Advanced Study Program for the Fourth Industrial Revolution

The mission of University of Liberal Arts Bangladesh is to developing young minds to their fullest potential through free and creative pursuit of knowledge. ULAB fulfils these aims by adopting an array of traditional and innovative academic and extracurricular programs and bringing to students the best that has been thought and accomplished in the arts and sciences throughout the world. Journalism is a profession with high moral standards and ethical codes.

ULAB, while designing its Digital Journalism curriculum, focuses on students' growth and transformations as a journalist. They have designed various workshops, masterclasses, field works, and in-house reporting systems to get acquainted with the standard procedures while studying journalism. Besides that, ULAB also know that with the fourth industrial revolution the market is leaning on innovative technologies, and professional journalists have no other choice than to make the best out of it. Therefore, the journalism course module is based on the relationship between journalism education and journalistic practice that is innovation-focused. Digital Journalism is a comprehensive Study Concentration under the Department of Media Studies and Journalism of ULAB. This Study Concentration is the latest edition focusing on theoretical study with practical implementation. This module offers nine different courses that encourage the students to explore various aspects of journalism while experiencing it.

### **Seoul Institute of the Arts (Korea, Rep.)**

#### Industry-Academy Cooperation Project on Digital Technology and Convergence of AI-linked Cultural Content

There is a need to develop creative talent through projects utilizing and linking AI (artificial intelligence) technology. Seoul Institute of the Arts aims to promote Korea's content industry with education projects and programs that develop cultural contents in such areas thereby enhance creative talents in AI-linked fields.

The education projects and programs include • Education, creation and presentation of interactive, immersive pilot content, such as AI, robot-based performance, games, and sound • Developing creative talent in AI-linked content and preparing them for employment with AI businesses

Followings are differences from traditional approaches: • Implementation of cultural content, AI-linked convergence curriculum and project-based programs • Implementation of education programs tailored to the characteristics of each project, such as technology and content convergence curricula, expert mentoring, special lectures, and workshops • Programs allow trainees to participate directly in projects

The project aims to promote AI-based knowledge and technology education for young artists, explore a new genre of art and apply it to artistic creations with culture and art companies and experts, and contribute to development of the non-face-to-face online art industry.

### **Lovely Professional University (India)**

#### Solar Autonomous Bus

Lovely Professional University is one of the largest University in India and spread across



600+ acre campus. From the very beginning LPU has always focuses on academic along with the aim of Experiential learning. An Innovation Studio in campus serves as a central hub for students to share and cultivate ideas from all disciplines across the university and spread across a 50,000 sq ft. area. In recent years due to immense advancement in automobile industry everyone is focused on driverless car and each day a new advancement is taking place. To be a part of this futuristic journey of the technology LPU students came up with a similar idea but with an innovative twist. As the world is facing a huge crisis over non-renewable energy sources so the research department finally concluded with an idea to have a driverless vehicle completely driven by solar power which not only reduces the running cost but is also ecofriendly. Also the existing autonomous bus present in the market provides provision of automatic start, operation, parking and relies on the driving instrument in the vehicle to realize unmanned driving, which can only satisfy the driverless motion. The existing vehicle deprived of challenges of roadside traffic, knowledge about surrounding environment. All these aforementioned gap is covered by the proposed model. The Solar Autonomous Bus is specifically designed to run within the large campus without any hassle.

#### **Incheon National University (Korea, Rep.)**

##### Development of a digital twin platform and business model linked to domestic and foreign technical standards

Digital Twin refers to the same implementation of information on the shape, nature, and state of physical objects existing in the real world. 3D modeling and simulation technologies have already been applied for a longtime in various fields of industry, including manufacturing. Digital Twin aims to play a leading role by combining advanced technologies in the traditional way of producing thousands or tens of thousands of products as a result of creating and simulating a single model, given that real-life and twins match one-on-one. It is necessary to secure building energy management technology based on digital twin for complex buildings with high energy demand and complexity. Next-generation EMS technology is required, such as real-time energy monitoring and optimal control, and big data-based energy use prediction and optimal maintenance. Building a new energy industry ecosystem by increasing the use of energy data to expand new services Digital technology is required to predict changing energy demand according to factors affecting energy consumption (e.g., external temperature, internal temperature/humidity, number of people in and out, movement route, event holding, etc.) as a base technology that can be expanded to energy saving and demand management through real-time optimal control of various energy facilities.

#### **FEU Institute of Technology (Philippines)**

##### The School of Innovation

FEU Institute of Technology (FEU Tech) has been aggressive in identifying and adopting strategies and new technologies to fulfill its commitment of creating the next generation of changemakers and nation builders. The university has been investing in new and emerging technologies that support Industry 4.0 through the FEU Tech Innovation Center (FTIC). Among others, FEU Tech is investing in the startup incubate (DWARM Technologies) and Miles Universe, the AR/VR enabled version of the university. In order to strategically decide which innovation activities and projects to pursue, the university set up a formal innovation process through the Innovation Council. This includes investing in building sustainable strategies, processes and systems for innovation. To harness the expertise within and among departments, the unified innovation approach allows a more systematic and synergistic way of collaboration. Part of the innovation strategy is to build FEU Tech's own innovation ecosystem champions. That includes expanding the external resources by inviting thought leaders and innovation experts as speakers who are extending their time and expertise to the university as part of their commitment in helping future innovators. The FEU Tech and the industry partners mutually enjoy the benefits from collaborations where they will have access to the talent of the institute.

### **St. Paul University Philippines (Philippines)**

#### SPUP Immersing in Technology-based education through Relevant, Adaptive, and Noble Strategies towards holistic Formation and Optimum access to SPUP's Remote learning system and Management

With the outbreak of the COVID-19 pandemic in 2020, SPUP's educational endeavors were interrupted, and its educational services shifted. The University has built digital infrastructures where both teachers and students are able to improve their skills, with a common goal: to create a more engaging and effective education process. With its engagement towards Digital Transformation program, SPUP is advancing it as a "culture" in the University. As such, the academic community is enjoined to bring together data more effectively across levels, disciplines, and work areas. Thus, it has ushered in the "Immersing in Technology-based education through Relevant, Adaptive, and Noble Strategies towards holistic Formation and Optimum access to SPUP's remote learning System and Management (SPUP iTRANSFORM)" project. SPUP's Digital Transformation, through its iTRANSFORM project, is a physical and philosophical change designed to meet the ever-growing demands of the University's academic community to create a learning environment where everything is connected. In SPUP, the iTRANSFORM project is an ecosystem that combines technology, services, and security to bridge the digital gap, to create collaborative, interactive, innovative, and personalized learning experiences.

### **Harvard University (USA)**

#### Leading Digital Transformation in Health Care

“Leading Digital Transformation in Health Care” is designed for business leaders who are responsible for leading technology-enabled change initiatives in health care. Those who will benefit from this program include changemakers at provider organizations, payers, medical device and supporting professional service providers (e.g. investing, finance, legal and consulting). Chief information officers as well as those with responsibility for patient experience, purchasing, sales and product management will all benefit from this program. The program intends to deliver strategies to design and implement technology-enabled change initiatives in health care. The program will address these topics through expert presentations, case studies, readings, small group discussions and class debate. The students leave the program ready to create a strategic framework for developing a digital health change management plan for the organization or the clients. The students will be joined by classmates from diverse segments of health care. This will strengthen their understanding of how to lead transformation within a complex health care ecosystem while they build a network of peers. This is a University Medical School online executive education program designed to provide business leaders with the knowledge, tools and strategies to design and implement technology-enabled change initiatives in health care.

### **Tra Vinh University (Vietnam)**

#### Building Educational Model 4.0 at Tra Vinh University

With revolution 4.0 with internet-based global connection, information explosion, the process of transmitting knowledge and experience between people also need to change accordingly. During past time, Tra Vinh University (TVU) has accelerated the changing process of management and training in order to adapt to the industrial age 4.0. In modern society with the industry 4.0, it requires people with multi-intelligence such as emotion, movement, language and so forth. Therefore, the university educational goal is towards maximizing personal potential ability and intellectual. TVU have to train what the society needs. In other words, the content of the training programs is built according to the need of society. Moreover, with modern teaching methods, it has trained students to be active in creative thinking and action. Learners will enjoy lifelong learning capacity, with constant updating of knowledge in order to be able to keep up with constant change in work requirements in the era 4.0. Meanwhile, lecturers change their thinking and teaching methods, and play the role of orientation, give suggestions, organize students' discussions and debates, and guide them on how to search documents. Classrooms are no longer limited in space and time like in traditional ones. The interaction between lecturers and students can take place anytime and anywhere. In addition, with the building of rich and diverse open learning resources, it will actively support the self-study process and the creativity among students. Student assessment can also be done online.

### **Telkom University (Indonesia)**

## Plastic Waste Treatment 4.0

Population growth and transportation have resulted in an increase in the volume of plastic waste. Plastic is a polymer with a structure that is difficult to break down. This has prompted Telkom University researchers to find effective decomposition methods in plastic structures, especially in handling plastic waste. Therefore, this study aims to depolymerize plastic structures using IL. IL is an organic salt that has a melting point below 100 °C which acts as a pretreatment agent, and is a promising technological discovery in the future. Differences from traditional approaches are post-use plastic waste treatment using ionic liquid (IL) with the microwave mixing method. Problems in implementation are classification and characterization of plastic waste. The problems could be solved by provision of information on the characteristics, composition, structure of plastics. Measurable output is a solution in processing plastic waste and collaborating with the government and the community in overcoming plastic waste, as well as making plastic waste a source of green energy in the future. There is the potential of post-use plastic waste treated with IL and microwave mixing into an environmentally friendly alternative fuel after going through chemocatalytic and biocatalytic processes.

### **National Chi Nan University (Taiwan, China)**

#### Operational Project for Academic Portfolio Database of Senior High School Students

National Chi Nan University is establishing the Academic Portfolio Database of Senior High School Students for the consolidation and analysis of the senior high school student portfolio information, which will serve as the basis for policymaking in education and reference for high schools in enhancing their teaching quality. The student portfolio developed will document a complete record of the students' academic performance in high school. The establishment of a student academic portfolio has the following positive influence. Firstly, in the process of creating a student portfolio, students would find it difficult, but they may be rewarded immensely. To be included in the student portfolio, the works of students must receive the recognition of the subject teacher. The difficult part is that to meet the requirements of the subject teacher, students must undergo numerous rounds of rejection and amendment. An extra reward for the students is the growth in mindset: Students would come to understand that their effort and perseverance will produce results that are up to the standard. Further, the student portfolio can show the university the student's learning progress in various fields and therefore serves as an important input for the application.

### **Fatima Jinnah Women University (Pakistan)**

#### Augmented Reality Based Lecture Feedback and Evaluation System to Support Instructor and Learner Communication

During the past few years, there has been a rapid increase in use of Augmented Reality (AR) to ease daily tasks. AR system can be used to support communication in the classroom and fill the gap. In many situations, the professor must derive the competence and development of the students from their facial expressions and behaviors, a process which is completely arbitrary which can easily lead to misinterpretation. Therefore, the need is to develop User friendly, Economical & Portable soft system that maintains student's privacy, enhance teacher's efficiency and performance, Cater Students perception of teacher's biasness and Provide timely feedback and evaluation. The fundamental concept behind the proposed scheme was to allow students to show visual signs that would demonstrate their current status, and then the lecturer could see through google cardboard. Students would then be presented with a previously inaccessible communication channel that would allow them to communicate privately and directly with the lecturer, without even acknowledging fellow students and without interrupting the lecture. The system aims to develop improved web-based communication between the lecturer and students. The web application can be accessed by students during lecture to provide response and feedback anonymously during lecture.

### **Afeka – Tel-Aviv Academic College of Engineering (Israel)**

#### A Comprehensive Higher Education Approach to Preparing Engineers for Work in Industry 4.0

The main technological advances characterizing Industry 4.0 include: • The Internet of Things • Big Data • 3D printing • Robotics. Afeka – Tel-Aviv Academic College of Engineering recognizes the importance of preparing its engineering students for entering the Industry 4.0 workforce. To this effect, the college made the decision to establish a dedicated Industry 4.0 lab, upgrade existing labs and infrastructures and to offer a variety of academic programs, courses, conferences, and other activities in the Industry 4.0 domain. Afeka has taken on a strategy of forming collaborations with the industry, and developing a relevant curriculum in this field. This will enhance the collaborations between Afeka College and the leading smart industry figures in Israel. The college offers various courses in several academic programs with content related to Industry 4.0. A dedicated teaching lab was designed and constructed and is currently operating as part of the curriculum. The subject of Fourth Industrialization will be studied in a dedicated specialization in the academic program of Industrial Engineering and Management. Furthermore, staff members specializing in Industry 4.0 will be recruited, and collaborations with industry will be deepened.

### **Hanbat National University (Korea, Rep.)**

#### Dual Degree program for Smart Factory Engineer

Dual Degree program for Smart Factory Engineer is innovative Curriculum for smart factory

engineer. The curriculum for smart factory engineers fully considers the professional characteristics of Data literacy and Device literacy. The Innovative educational methods – including PBL (problem-based learning), Team teaching, Industry-University R&D Projects – coupled with the curriculum strengthen students' abilities. The program includes the Curriculum for smart factory engineer revised every year for satisfying needs of students, industry, and professors' opinions. The number of students who got SMSCP - international certificate for smart factory engineer issued by SIEMENS – increases annually. Factory-level smart factory equipment has been designed and fully implemented including digital twin for smart factory testbed. Innovative educational method coupled with curriculum has been successfully adopted by professors and student. Hanbat National University analyzes the benefits considering required manpower and budget for leading university program for 4th industrial revolution and measure it's total effects. For the sustainable operation of smart factory engineer dual degree program, the university try to secure a budget for participating in the MOE funded program. To support the digital transformation of regional manufacturing companies, the university develop the On-demand education program for industry employee.

### **Far Eastern University (Philippines)**

#### Innovations in Teaching and Learning on Industry 4.0 (I 4.0) and Smart Nation

Far Eastern University applied for and was awarded a PhP25 million grant for an International Continuing Professional Education Program (ICPE). The program, entitled Innovations in Teaching and Learning on Industry 4.0 (I 4.0) and Smart Nation, is a capacity-building program aimed at producing I 4.0 and Smart Nation Curriculum Champions nationwide. One component of the program includes the establishment of the Center for International Innovations in Teaching and Learning (CINTEL) for Industry 4.0 and Smart Nation. It will serve as the center for research, innovation, technology, and professional development for faculty and academic staff nationwide. Through proper implementation, the program hopes to produce competitive, industry responsive graduates across the Philippines who are proficient in Industry 4.0 and enablers of the country's very first Smart Nation. The program aims to develop 30 key academic managers from Philippine HEIs who will serve as experts and key resource champions in innovations in teaching and learning on "Industry 4.0 and Smart Nation" in their region or cluster. Participants are mainly deans and academic heads of ICT, engineering, and other related programs. Ultimately, this phase includes the establishment of the Center for International Innovation in Teaching and Learning (CINTEL) for Industry 4.0 and Smart Nation. This will serve as the center for research, innovation, technology, and professional development for HEIs in the entire Philippines

### **Huazhong University of Science and Technology (China)**

#### Ultrafast laser 3D printing of complex semiconductor micro-nano structures A solution for 3D

## semiconductor functional devices

Semiconductor industries have grown exponentially according to Moore's law over the past half-century, which has led human society into the era of information and communications with revolutionary economic and social impact. In recent years, however, Moore's law has gradually come to an end due to ever-increasing production costs, technology barriers, and fundamental physics limits. Most current semiconductor manufacturing processes encounter challenges to meet the future demands of ever-growing transistor performance and integration density, which lead to the crisis for the future development of emerging technologies, such as artificial intelligence (AI), 5G/6G, internet of things (IoT). The research on how to achieve the fabrication of high-precision heterogeneous 3D semiconductor micro-nano structures and functional devices is of great significance for the future development of 3D integrated systems with higher functionality and integration density. This research opens a way for the fabrication of a variety of functional materials such as composite metal oxides and even metal micro-nano structures, which is expected to promote the development of 3D integrated functional devices in the fields of micro-nano photonics, electronics, MEMS, and energy storage.

### **University of Pennsylvania (USA)**

#### Economics of Blockchain and Digital Assets

We are at the beginning of a global wave of demand for blockchain academic and professional education and certification. The University was the first to recognize this need and responded by offering the first Master of Science degree in Blockchain and Digital Currency, available to students worldwide through an online format since 2014 and on campus since 2021. The programme is hosted by the Department of Digital Innovation. An increasing number of finance, banking, computing, supply chain, SaaS, AI and IoT businesses are discovering the benefits of this technology. This new potential and the new risks it may involve have to be carefully evaluated by expert lenses, not just in one field, but through the interface of many expert tangents. In this increasingly competitive and interconnected environment, challenges abound and there are no easy solutions. The more spherical the education, the more responsible business decisions can be made, and the best vectors to maximize the advantages out of the use of this technology, can be achieved. The Master's degree is designed to prepare participants to become competent professionals in the field of digital currency and Blockchain technology. Graduates benefit from a broad background, combining courses in Finance, Management, Computer Science, and Information Systems to provide a holistic analysis of Cryptocurrencies and Blockchain systems, applications, and services. By participating in this program, students are positioning themselves to be part of an exclusive set of professionals in business/finance and IT that have a broad understanding of the financial, regulation, cryptography, game theory, and

technology innovation markets that are enabled by blockchains.

### **Imperial College London (United Kingdom)**

#### MSc Environmental Data Science and Machine Learning

Our MSc Environmental Data Science and Machine Learning will educate future environmental scientists in data science, machine learning and associated computational technologies. The students will learn to apply computing knowledge and techniques, and machine learning to real-world environmental contexts and problems. The Environmental Data Science and Machine Learning MSc programme will teach the students. to apply data science and machine learning knowledge, and computational modelling and monitoring techniques, to a range of environmental science and engineering applications. Graduates of this course will be equipped with the skills required for the next generation of environmental scientists and engineers. Through the multidisciplinary focus of computational knowledge and techniques, within the context of solving environmental science problems, the students will be able to pursue further research in any of these fields or move into careers in fields such as climate science, sustainability, natural hazards and renewable energy. Many of the skills taught are applicable broadly across all of science and engineering and so potential career paths are hugely diverse. The additional knowledge of environmental science and associated engineering solutions the students will be exposed to in this course will make them particularly attractive to anything from relatively small environmental and engineering consultancies to large multi-national organizations including those in the energy and big tech sectors.

### **University of Split (Croatia)**

#### Blue digital innovation hub

Fourth industrial revolution implies joint implementation of smart and digital technologies with physical objects, in all disciplines across all industries, economies and societies. Given the potential of its impact, it is considered as a major vehicle that can be used to address some major environmental changes and to establish sustainable and green societies and economies. To contribute to a more digital and greener Europe and repay to society with research and innovation knowledge and skills, University of Split has established Blue digital innovation hub (Bluedih). As the first step Bluedih has registered in the JRC DIH catalogue in November 2020. The second step was mapping all the existing resources, infrastructures and facilities of each of the partners that can be used for development and implementation of digital innovations. From there on, focus has been placed on widening Bluedih corridors and improving its services and organizations by applying to new projects, establishing international partnerships with European DIHs, and expanding consortium. University of Split plan to apply Bluedih for the EDIH call, which



would give access to funding the activities and provide us with opportunity to improve the services and serve a larger number of regional SMEs, enterprises and public institution.

### **Tashkent State University of Law (Uzbekistan)**

#### Conceptual and legal basis for the creation of e-government in the Republic of Uzbekistan

This project is aimed at further improving the legal framework of "e-government" in the Republic of Uzbekistan. The project will consist of legal regulation of the use of ICT in public administration. At the same time, it is aimed at optimizing the work processes of government agencies. This system is very comprehensive and serves to organize the theory of public services in Uzbekistan. As a result, the Concept for the introduction of "e-government" in the Republic of Uzbekistan will be developed. This project is implemented in close cooperation with the Academy of the Prosecutor General's Office of the Republic of Uzbekistan. Some of the tasks set for the project will be carried out with the direct participation of the Academy. The project will also be tested not only at the Tashkent State Law University, but also at the Academy. The system is so comprehensive that there is no analogue of this project on the digitization of the educational process in Uzbekistan. Also, problems caused by pandemics and other negative factors affecting similar learning processes can be overcome through this project.

### **Esade University (Spain)**

#### Bachelor in Artificial Intelligence for Business

In today's economy, companies need to handle data quickly and efficiently. Even non-tech sectors such as finance or healthcare need professionals who can make the most of the power of Big Data by applying artificial intelligence (AI). On the other hand, AI experts also need business knowledge to leverage data according to the needs of companies. The Bachelor of Business Administration & Bachelor in Artificial Intelligence for Business will give the students the tools to integrate Big Data expertise with management and leadership skills. Esade University combines business knowledge with Artificial Intelligence and leads the technological transformation with this unique double degree in Spain. With the Double Degree in Business Administration and Law the students will develop a multifaceted and differentiated professional profile, a profile highly demanded by companies and law firms around the world. The students will comfortably be able to integrate business-related decision-making with the application of corresponding legislation. Adding clearly differentiated value to any project the students take on. Over the course of the programme, the students will work on fundamental soft skills and competencies: creativity, resilience, time management, teamwork, leadership, social responsibility, and more. These sessions give the students a broad perspective on business management, expanding the students' capacity to integrate the use of artificial intelligence and other technologies in the students' management

skills.

## **University of Washington (USA)**

### Fintech Incubator Competition

In partnership with CoMotion, the University holds an annual Fintech Incubator Competition with the goal of identifying talent with promising technologies to join the incubator located in Startup Hall. The university helps creating the next generation of financial service innovations in Sound Credit Union's FinTech Incubator Program. The technology strengths and resources of greater Seattle and the UW ecosystem make a powerful combination that is poised to build the next generation of financial services innovations. This focus on financial services innovation will benefit a large section of the community at a time when technology and disruption are simultaneously beneficial and potentially polarizing. Both Sound Credit Union & UWT are driven by the purpose of helping individuals, businesses and our community grow and succeed. In this competition, Sound Credit Union is seeking FinTech innovators from the state of Washington who have an interest in creating digital solutions that can provide credit union members with the tools needed to make confident financial decisions and at the same time, make everyday life more affordable. In this competition we are seeking FinTech innovators who have an interest in creating digital solutions that can provide credit union members with the tools needed to make confident financial decisions and at the same time, make everyday life more affordable.

## **Universidad Externado de Colombia (Colombia)**

### UEXT moving in advance into the Fourth Industrialization

Although in the last 5 years, the Universidad Externado de Colombia has become more aware of the dynamics in the world, science, knowledge, and education have been focused on research, innovation, and generating impact on the community in every aspect. This has been accomplished through its substantive functions in this way: Teaching - Establishing and promoting academic spaces, formal and informal, where all the dynamic changes in artificial intelligence, big data, digital technology, and their impact on the social sciences can be taught and transferred. Research - Academic collaboration, internal and externally, with different agents, researchers, and stakeholders in order to generate new knowledge and contribute to the academic community and society about the advances, changes, and new context related to the Fourth Industrialization in different areas. Social extension - Various activities to contribute to and raise awareness about the changes and impacts of IA, big data, and digital technology on various areas. All the different strategies implemented are a continuous work in progress, considering that most of them are related to the action of education, which is one of the main purposes of the Universidad Externado de Colombia, as a higher education institution. In addition, it is a continuous search at

the University for new strategies, tools, ways of doing things, projects that promote knowledge generation and innovation, to face the Fourth Industrialization reality.

### **Uttaranchal University, Dehradun (India)**

#### Innovation Umbrella 4.0: Meeting SDG goals through Techno Innovation

Digitization or digital technology has changed the world completely that we used to see 15 to 20 years back. It has revolutionized the world and impacted each and every sector including human society and behavior. Modern technology like IoT, Cloud computing, machine learning, data analytics, Artificial intelligence, Renewable Energy are combating each and every challenge faced by the human and its establishment. In the current world, technology is replacing those who are not using the technology and our generation is now called tech savvy. In view of that Research & Innovation plays a vital role in instilling the in depth understanding of the existing technology and its application including future development. The projects assigned by faculty members and students are done under a single umbrella that is named as "Innovation Umbrella 4.0" and recently it has also incorporated one of the goals of SDGs, ie, good health and well-being, quality education, clean water and sanitation, affordable and clean energy, industry innovation and infrastructure, sustainable cities and communities, etc. defined by United Nation, popularly called United Nations Sustainable Development Goals. Due to untiring effort of faculty and staff members and thriving for innovation and technological development, number of ideas are developed that finally gets converted into filing of patents and research paper writing.

### **National University of Uzbekistan (Uzbekistan)**

#### Synthesis of cyclohexane on the basis of ethylene

National University of Uzbekistan Multan has developed Synthesis of cyclohexane on the basis of ethylene. The project will be implemented as a practical project and will be continued in the future as an innovative project. Cyclohexane is used in various fields, including the Shurtan gas chemical complex. This substance is not produced in Uzbekistan, it is used at the expense of imports. Synthesis based on local raw material-ethylene is economically efficient and important. Synthesis of cyclohexane on the basis of local raw materials replaces imports and can be exported. The main method of obtaining cyclohexane is based on benzene and is catalytic hydrogenation. In contrast to this approach, ethylene-based synthesis is recommended in the project. An innovative project can be given upon completion of a practical project. There is the difficulty of manufacturing some unique devices (e.g. plasmochemical reactor). Problems can be solved by strengthening the technical base.

### **Lyceum of the Philippines University Cavite (Philippines)**

## E-Sports Fair

Lyceum of the Philippines University Cavite provides an avenue for students to explore the emerging esports industry through career talks and an e-sports tournament. They provide a place for students to develop as the future foundations of the 4th Industrial Revolution. In 2019, Newzoo's Global Esports Market Report stated that global esports revenues hit \$950 million and have eclipsed the \$1 billion mark in 2021. As an emerging industry that is fast connected to the 4th Industrial Revolution, it is important for educational institutions to explore this industry as a career avenue for students. Taking a look at the exponential growth in the esports industry, it is a good time to explore this industry in terms of academia. Looking at the viability of the industry is the first step in the exploration process. This esports fair is designed to look at the response of the stakeholders into this potential. With the esports fair in the university, this is one of the first times an academe has decided to explore this industry and promote an esports tournament publicly. Aside from traditional academic events in the university in 2019, this promoted gaming as a career path instead of traditional career paths that students normally pursue in a university. This event is also proof that the university is ready for the challenges of the 4th Industrial Revolution. Due to the pandemic, this event was halted temporarily but the university plans to continue this event.

## **University of Wyoming (USA)**

### Center for Blockchain and Digital Innovation

In recent years, Wyoming state passed groundbreaking legislation to create a regulatory environment to foster blockchain application growth and diversify the economy. Blockchain is a digital record of transactions in which each transaction added to the chain is validated by multiple computers. Blockchain technology enables cryptocurrencies and digital assets but also has many other uses, such as supply chain management and payment systems. Many large companies already use the technology, but blockchain and cryptocurrencies will become much more ubiquitous in everyday life. To aid this effort and train the upcoming workforce, the University is launching a new Center for Blockchain and Digital Innovation. From there, the university will work to develop technical graduate certificates and a joint law and master's degree. The Center for Blockchain and Digital Innovation features an interdisciplinary approach among the University colleges -- including the College of Business, the College of Engineering and Applied Science, the College of Agriculture and Natural Resources, and the College of Law -- as well as the state's community colleges. The CBDI is shared by the College of Business, College of Engineering and Applied Science, College of Agriculture and Natural Resources, and the School of Energy Resources; it is also working with the state's community colleges.

## **World University of Bangladesh (Bangladesh)**

## Bluetooth Controlled Robotic Car Using Arduino

World University of Bangladesh (WUB) is developing the remote buttons in the android app by which WUB can control the robot motion with them. The main objective is to provide simpler robot's hardware architecture. The main brain of this project is the arduino, but in-order to drive the motor WUB used motor driver with appropriate power Nowadays smartphones can be used to control a host of electrical and electronic devices including motors and lights. Here WUB present an Arduino based robot car, which can be controlled using an Android smartphone having Arduino application installed in it. This robotic car receives commands from the smartphone with the help of a Bluetooth module. Using a Smartphone as the "brain" of a robot is already an active research field with several open opportunities and promising possibilities. Advanced and compatible with 4th Industrial revolution. The knowledge is ever expanding and so are the problems which the mankind strives to solve. In this spirit, it is hoped that the current activity will lead to further enhancements.

## **Bucharest University of Economic Studies (Romania)**

### Mathematical modeling of the factors that lead to subscribing unsubscribing from email lists, forums, social media groups

The development of digital technologies has fundamentally changed the way companies interact with customers and potential customers. The emergence of Big Data technologies has favored the management and processing of large volumes of data downloaded from the Internet, and social networks. The use of open source data and software solutions to enable all stakeholders to use or develop the software components created. The project aims to identify and mathematically model the factors that contribute to consumer decisions, as reflected in the digital environment, using machine learning techniques and stochastic models, adapted to automate the processing of large volumes of data, available online. Unlike traditional methods of identifying and modeling the factors influencing consumer decisions based on the processing of data taken from opinion polls, which are expensive, dependent on the target group, type consumers and whose generality is relative, the project aims to adapt machine learning and stochastic models in the application of big data analytics, for the automation of social opinion mining, thus increasing the development speed of the model, the generality of the results and substantially reducing the costs.

## **University of Amikom Yogyakarta (Indonesia)**

### TangselPay Government Services on your hand

The Covid-19 pandemic has disrupted administration in public services. Changes are needed for the State Civil Apparatus in public services. TangselPay is a Fintech application used as

a means of Payment of Levies, Multi Payments, and Tax Payments. This application can be downloaded through Playstore and App Store. There are various service features in the application, such as shopping (E-commerce), food and beverage payments, PLN electricity, levies, and taxes. Tangselipay also cooperates with local banks and provides Unsecured Credit (KTA) program facilities. This application provides convenience for citizens and is transparent. The vision of South Tangerang City is to become a smart, quality, and competitive city based on technology and innovation. South Tangerang City supports the cost of production, human resources, and infrastructure. The city government digital transformation uses Artificial Intelligence, Machine Learning, and Big data. With this project, 1 million residents of South Tangerang can be served via cell phones, and regional original income increased.

### **Canadian University of Bangladesh (Bangladesh)**

#### Department of Shipping and Maritime Science

There are Department of Shipping and Maritime Science in Canadian University of Bangladesh. This department is using Fourth Industrial Revolution technologies such as data science, artificial intelligence, and application of operational research to create new and innovative means for sustainable shipping and maritime activities. Object is to create a research-based department, that will offer Master's degree in Maritime Transportation and Logistics, Ship Manning Agency, and a Marine Academy for pre-sea training. And also Ph.D. degrees on various subjects related to maritime industry. Future research collaboration with IMO planned and World Maritime University (WMU), in Malmo, Sweden. This is the first department of its kind in Bangladesh. No other private university in Bangladesh is training students to be officers on marine vessels. No other university in Bangladesh has a maritime lab. Many objectives of the department have already been implemented, including Bachelor's degree program, and Maritime Lab. Approval is expected shortly from government for our Master's program in Maritime Transportation and Logistics. The department has already made an impact on the University, by creating an international profile for the University, due to its collaborative efforts and placement of graduates around the world. Students are working in the field, onboard as marine officers, and ashore in shipping yards.

### **Zhejiang University (China)**

#### ZJU scientists develop soft robot for exploration in Mariana Trench

The Mariana Trench is the deepest part of the Earth. Without a pressure-resilient "armor", a man-made machine would be destroyed by the overwhelmingly hydrostatic pressure if it were to venture into this uninhabitable territory. However, deep-sea creatures can thrive at extreme depths thanks to their unique anatomies. If we can draw inspiration from deep-sea creatures, converting

the “secret of life” into the “power of machinery”, we will be able to develop intelligent machines that can adapt themselves to complex environments, thus promoting the exploration of deep seas. The research team led by Prof. LI Tiefeng from the Center for X-Mechanics at the Z University School of Aeronautics and Astronautics and Z Lab conducted inter-disciplinary research with its partners and pioneered in proposing the principle of pressure adaptation in mechatronic systems. They developed an untethered bio-inspired soft robot for deep-sea exploration, with onboard power, control and actuation protected from pressure by integrating electronics in a silicone matrix. Their research findings were published as a cover story entitled “Self-powered soft robot in the Mariana Trench” in Nature on March 4. This research opens up a new channel for deep-sea explorations and environmental observations, and is expected to improve the application capability of deep-sea intelligent devices and robots in multiple tasks and complex scenarios. In this work, researchers verified the feasibility of materials and structures through a large quantity of simulation experiments in high-pressure environments. This soft robot experimentally proved to work properly in harsh and special environments, including deep seas, polar regions and high-impact areas.

### **Tarlac Agricultural University (Philippines)**

#### Global Discourses on Agri-Intelligence Engineering and Technology

Tarlac Agricultural University has been ranked in THE Impact Rankings which puts the university as one of the prime movers in helping achieve the Sustainable Development Goals (SDGs). It is also part of the university's goals to promote and implement initiatives that could help address the problems in the society. As part of the contribution to the university's goals, the field of engineering and technology calls for the achievement of the Sustainable Development Goals. Engineering courses like Agricultural and Biosystems Engineering play an important role in contributing to the achievement of these goals. This initiative is not just a sole effort of the institution but a collaborative approach involving other institutes, and universities, both national and international, as partners. There is already an emerging trend on IoT and use of Artificial Intelligence and some of these applications are presented in this activity, specifically inclined to Agro Industry. Moreover, the event was anchored on the Sustainable Development Goals which would contribute to a global concern. Thus, sustainable use of resources is also emphasized in the webinar. In addition, the collaborative approach employed in this activity opened opportunities for future undertakings in instruction, research, training, knowledge and expertise exchange among partners including faculty, students and other stakeholders.

### **Hankuk University of Foreign Studies (Korea, Rep.)**

#### Data Construction Project for Artificial Intelligence Learning

Hankuk University of Foreign Studies launched data Construction Project for Artificial Intelligence Learning on 1st July 2020. Background of this project is development of core technologies in the knowledge service industry. For the project, 12 researcher, 2 staffs in charge of administration of human resources was put on. The project is related to HUFS 2028 which is long-term university planning. Their sequences for execution are (1) data crawling (2) translation (3) Data preprocessing. The project aims to building data for development of an artificial intelligence chatbot that supports learning. Key point of the project is building data which includes emotional expression. The responsible organization of the project is Hankuk University of Foreign Studies (HDC [HUFS Data Center], University Knowledge Contents & Press). At the moment, the project is in its early stages of commercialization. If students worked as researcher, one can able to experience various translation (Post editing) experiences that cannot be learned at school. Professor who works as principal investigator (PI) makes an action-plan and works hard on contacting the companies. Measurable output is (1) building 40,000 chatting data, (2) 20,000 corpus translation pair data (3) 5,000 test (FLEX Indonesia) data.

### **GISMA University (Germany)**

#### MSc Data Science, AI, and Digital Business

The unique combination of technology and business in digital revolution which will help the students keep a competitive advantage in the job market and advance into a future-oriented career in a global company or innovative start-up. Digital technologies are omnipresent in today's society and business world. All areas of life are affected by a digital revolution which is evolving faster and faster. Artificial intelligence, 5G, Big Data, the Internet of Things, and Blockchain will disrupt traditional business models. Job roles will change. The University Business School supports flexible and individual learning by applying a systematic hybrid learning scheme. The programme is perfect for those with undergraduate degrees in engineering, data science or technology-related sciences who seek to specialize further in this field. It is also perfect for graduates of other complementary scientific disciplines such as business, economics, law, social sciences, or psychology, who are interested in pursuing a data-related career path. This programme is also suitable for anyone who has work experience in data science and AI and wishes to advance their career with a postgraduate degree. With a diverse skillset in data science, AI, and digital business the students might choose to join a leading data or technology company such as Google, IBM, or Apple. Alternatively, they would be perfectly equipped to contribute to the innovative start-up culture in Berlin, either by driving growth in an up-and-coming enterprise or by founding their own company. As they will have acquired valuable digital business competencies, they'll also have the option to venture into or advance in a different field of business, such as marketing or project management, and work in a data-driven leadership role.



## **University of Oxford (United Kingdom)**

### Blockchain Strategy Programme

Cryptocurrencies and blockchain technology are driving innovation and competitive advantage for companies in many industries and environments. Cryptocurrencies and blockchain-based financial systems regulate trillions of dollars in assets and facilitate trillions in economic transactions. In the future blockchain technology could radically transform the role businesses, institutions, and governments play in our world. The students will gain an understanding of how cryptocurrencies and blockchain technology work, the connection between technology choices, and their impact on business models and consumers and understand a frameworks and methodologies to analyze and articulate the challenges and opportunities associated with the use of blockchain technology in a business setting. By understanding the fundamentals of blockchain technology, the market landscape and use cases, students will have the tools and frameworks to build business strategies in sustainable, inclusive ways. Whether working in a larger organization, building a new venture, or exploring a career change, this programme is designed to help students. This programme is founded in combining rigorous theoretical strategic frameworks from the University, with an array of blockchain practitioners from across the world. The learning is structured around group work into a blockchain use case, and concentrates on extensive use of showcases to lead participants through the very latest successful strategies and experiences taking place in this emerging field. In order to achieve the learning objectives, the University is able to convene a powerful range of contributors from world leading data scientists, as well as a number of practicing entrepreneurs, technologists and financiers from multiple sectors.

## **Savonia University (Finland)**

### Internet of Things

The University UAS is one of Finland's biggest and most versatile Universities of Applied Sciences. Our campuses are located in the cities of Kuopio, Iisalmi and Varkaus. We have over 7000 Finnish students, 500 international students and 500 employees. The Bachelor of Engineering, Information Technology (Internet of Things) programme aims to develop experts in information technology with the specialization in Internet of Things (IoT). The degree programme qualifies engineers to work in the fields of IoT and Big Data; especially, in companies operating within the digital health and industrial internet sectors. The duties of an IoT graduate may vary from software design to electrical engineering, the design of smart wireless devices, and the whole IoT system in the cloud. The programme incorporates the Conceive, Design, Implement, Operate (CDIO) method to enhance students process of acquiring deep engineering know-how while developing communication, interpersonal, social and teamwork skills. IoT graduates are prepared to work in international environments and teams. Students get the chance to work

closely with local businesses in different courses throughout their studies. The IoT programme develops student's competencies with a focus on the industrial internet and digital health sectors.