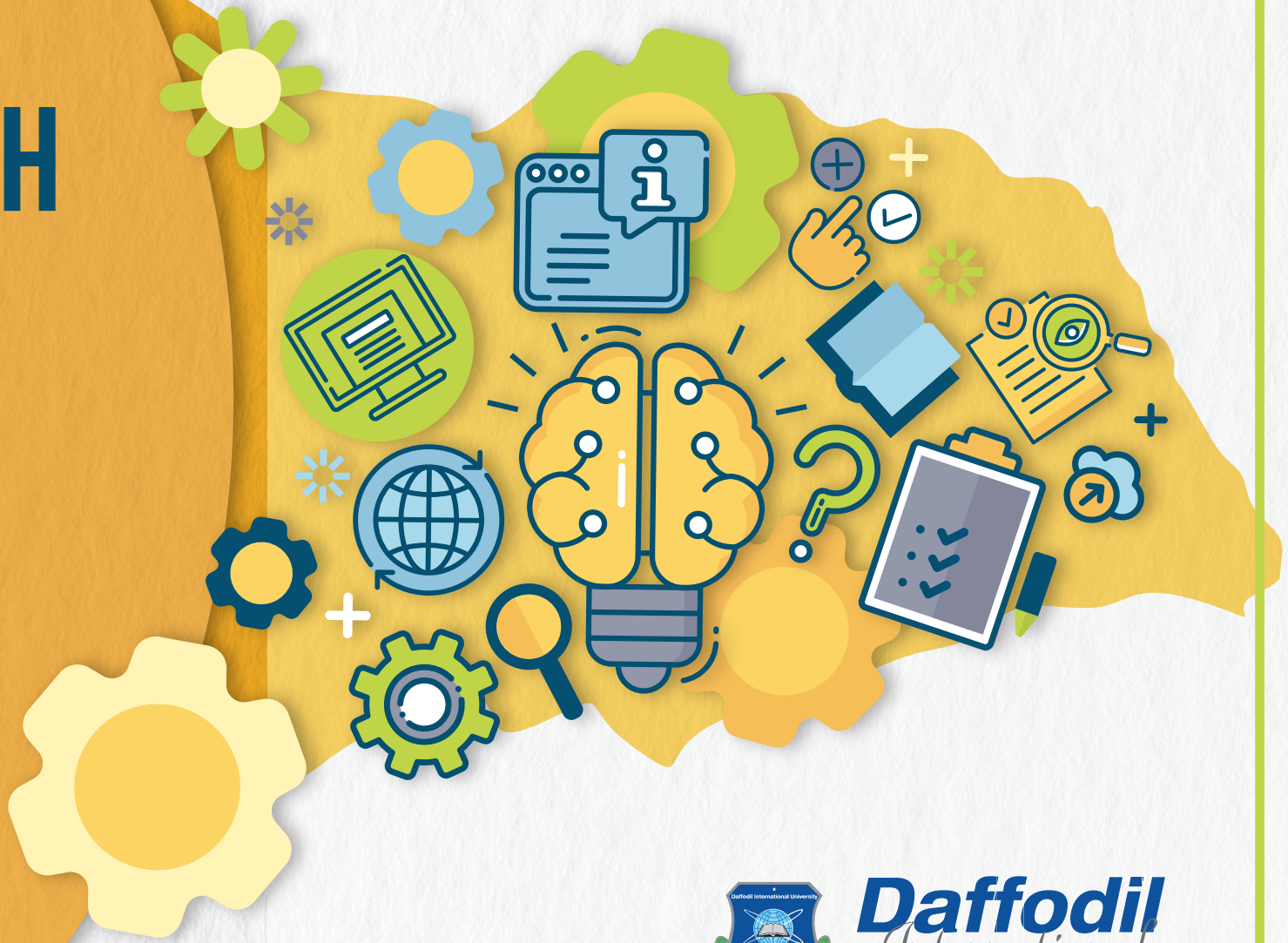
ISSN : 2791-1225 (Print)
ISSN : 2791-1233 (Online)

DIVISION of RESEARCH DIU

RESEARCH UPDATE 2022

VOLUME 1 NO. 1

Editors:
Dr. Md Kabirul Islam
Dr. Mohammed Shamsul Hoque



Daffodil International University

Dedicated to

The top management of DIU for their scholarly advice, and valuable support & the researchers for their tremendous efforts and contributions to knowledge

Published by

The Division of Research

Daffodil International University (DIU), Dhaka, Bangladesh

Publication Team

Professor Dr. Md Kabirul Islam - Editor

Professor Dr. Mohammed Shamsul Hoque - Associate Editor

Mr. Maruf Ahmed Tamal - Research Fellow

Jannatul Ferdous Dilruba - Creative Designer

Correspondence:

Email: kislam@daffodilvarsity.edu.bd

Phone: +880 1819-382879

DR. MD KABIRUL ISLAM

PROFESSOR

Faculty of Science and Information Technology &
Director, Division of Research

> Research is a movement from the known to the unknown, a thirst to add new insights with existing stock of knowledge. It's a voyage of innovation and discovery. The key purpose of research is to search for new knowledge and this new knowledge is the foundation of mankind.

EDITOR NOTE

The Division of Research of Daffodil International University (DIU) started its journey in July 2017. The goal of the research endeavor of Division of Research is to build a research culture at the department level and the university as a whole and consequently, establish DIU as a Research University in international arena. Managing and conducting collaborative research with national and foreign universities and involving students in research are important components of our research culture. Participation in world university rankings (especially THE and QS) and ensure a position in the ranking list is the best way to be recognized DIU by the global community. Quality education and research are two most important ingredients of world university rankings.

For achievement of the above goals, we give priority on setting up a research infrastructure in the university, and creating an appropriate environment for research and publications through awareness and capacity building, motivation, inspiration and encouragement of the faculty. These initiatives reveal positive impacts in terms of increasing number of quality ISI / Scopus publications and enable engagement of the faculty and the students serve the society both national and global for sustainable development.

We have been successful in achieving our dreams to some extent as the university already attained QS World University Rankings (Asia), Times Higher Education (THE) Impact Rankings, Scimago Institution Rankings and UI GreenMetric Rankings. Our faculty members and the students have published around eighteen hundred ISI / Scopus indexed publications since the inception of the university in 2002. The quality and quantity of these publications in the recent years are soaring. This research outcomes have created a turning point for the Division of Research to figure out the upto date contribution to knowledge in different disciplines and share our talents with the partners, collaborators and international communities through publication of this periodical. This research update incorporates latest development and innovations in different disciplines of the top ranked universities to acquaint our teaching and learning communities to be able to reach to that quality level in future. In addition, the readers will also discover a few evidences of valuable outcomes and innovations of the national and international research projects awarded to the deserving faculty members of the university.

Publications of this first issue of volume one may earn a lot of valuable criticisms, feedback and suggestions from the readers for further improvement. Warmest congratulations and appreciations to the publication team, contributors, researchers of DIU, collaborators and international audiences.

We express our sincere gratitude to the top management of DIU, especially the Honorable Chairman BoT, Dr. Md. Sabur Khan, Vice-Chancellor, Prof. Dr. M. Lutfar Rahman and Pro-Vice-Chancellor, Prof. Dr. S.M. Mahbub Ul Haque Majumder for their kind support, valuable feedback, and encouragement for this scholarly publication.

Daffodil International University

Daffodil Smart City, Ashulia, Dhaka

Website: https: //daffodilvarsity.edu.bd

RESEARCH UPDATE
CONTENTS

CHAPTER 1

RESEARCH CULTURE

INTRO

This chapter will introduce a research culture model perceived and developed by Prof. Dr. Md Kabirul Islam, Director, Division of Research. The model demonstrates different activities which may lead to developing a research culture especially, in a young university.

CHAPTER 01

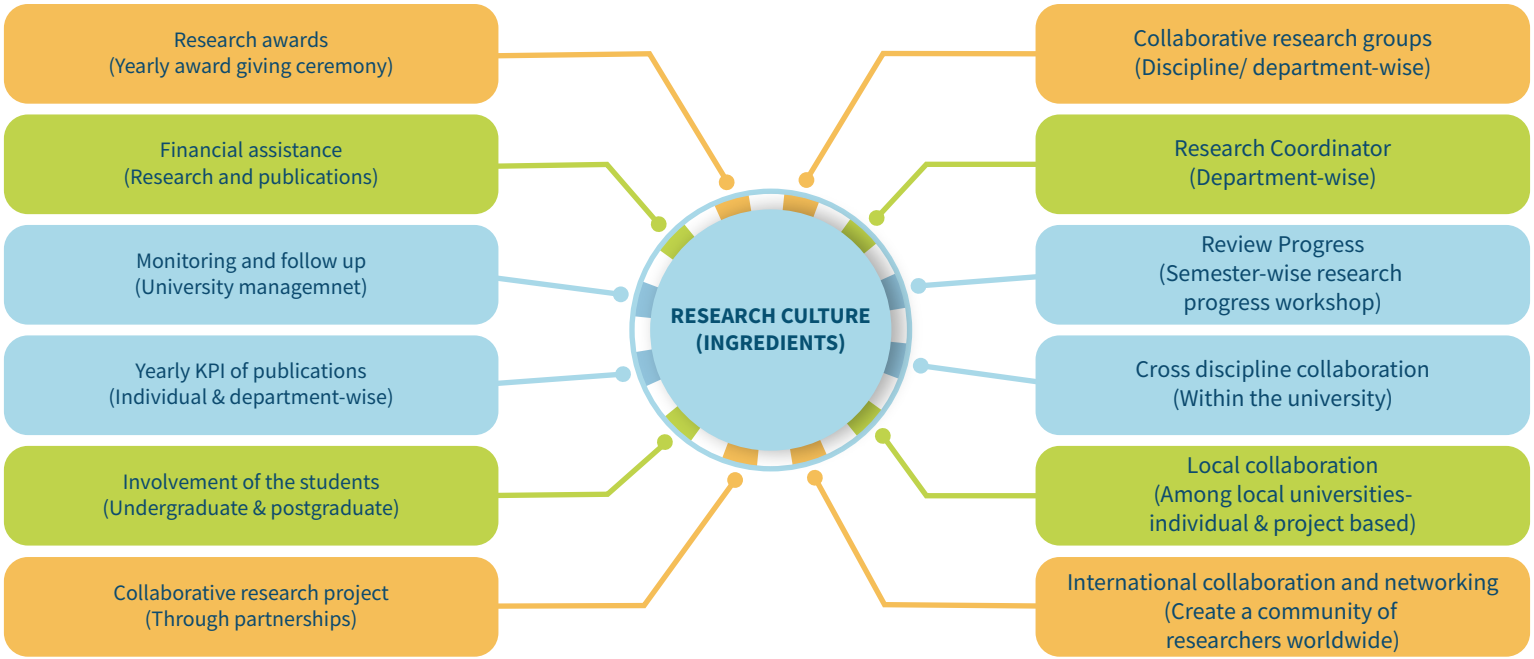
INSTITUTIONALIZING A RESEARCH CULTURE IN A YOUNG UNIVERSITY: DIU PERSPECTIVE

Md Kabirul Islam

Creating a research environment and establishing a research culture are crucial aspects for a university. A university ought to contribute to society through its innovations and discovery in different disciplines. Tertiary-level universities are recognized by the global communities for their ground-breaking research outcomes and their applications in practical contexts.

This article demonstrates: In what ways a research culture was established in Daffodil International University within a few years starting from 2018? Initially, the goal was to establish a research culture in the university by setting up an entity 'Division of Research' for overall research management and providing support to the faculty members. A weak plan of action was adopted for the encouragement of the faculty members by giving financial incentives and publication fees. Within a year or two ongoing initiatives and efforts for doing research and involving faculty members and the students earned satisfactory research outcomes.

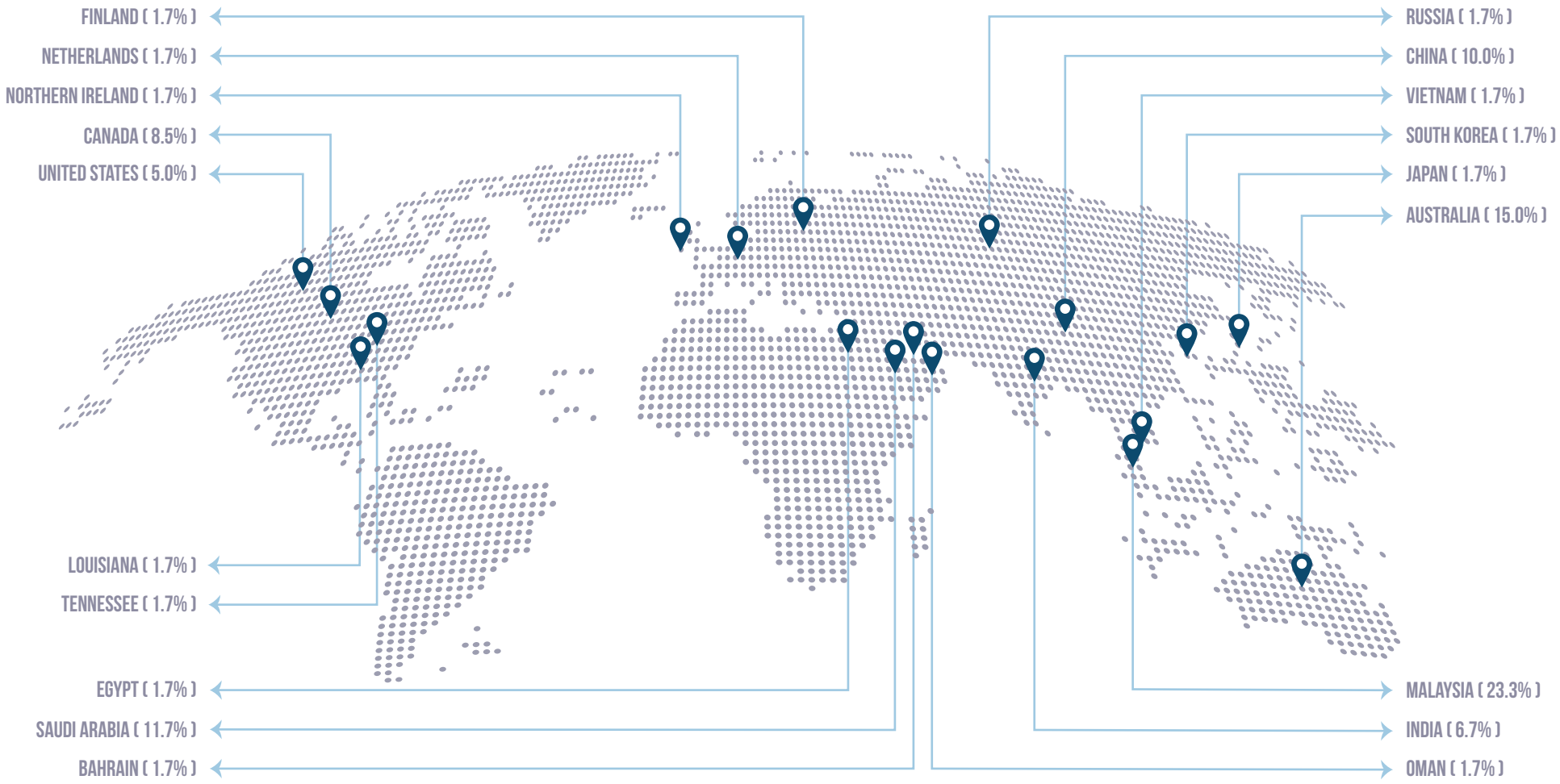
The latest research environment at Daffodil International University illustrates a sustainable model of a Research Culture. Various components of this model are presented in the following diagram.



COMPONENTS OF DIU RESEARCH CULTURE MODEL

The model is comprised with different activities which may lead to developing a research culture especially, in a young university but there is no specific starting point. Initially, brainstorming on this issue guided to appoint a Research Coordinator at each department among the faculty members to organize internal research activities of the faculty members. My PhD in a western university and academic experience of different foreign universities may have guided to adopt a collaborative philosophy for managing and conducting research activities. Consequently, we formed different research groups among the faculty members of each department according to their research interests. I found a very interesting aspect for collaboration and interactions that each group comprised with junior, mid-level, and senior faculty members. The combination was appropriate for the professional development of individuals and research capacity building of the departments as a whole. The semester-wise research progress workshop was found to be a crucial component for monitoring and reviewing progress. An individual teacher of the department has to present his/her research endeavor and publication status on certain criteria decided earlier but there was flexibility and freedom to include relevant issues.

The faculty members were guided and encouraged for cross-discipline collaborations within the university, and local as well as foreign university collaborations. The purpose was to enhance their research experience and quality of publications, especially in high-impact factor journals. In fact, various strategies were also adopted for international research collaboration and networking. Overall, the university imposed a yearly KPI of quality publications (indexed in recognized databases) to the faculty members and acknowledged their contributions by awarding various rewards.



DIU INTERNATIONAL RESEARCH NETWORKING

(Source of data: scopus.com)

CHAPTER 2

DIU RESEARCH TREND

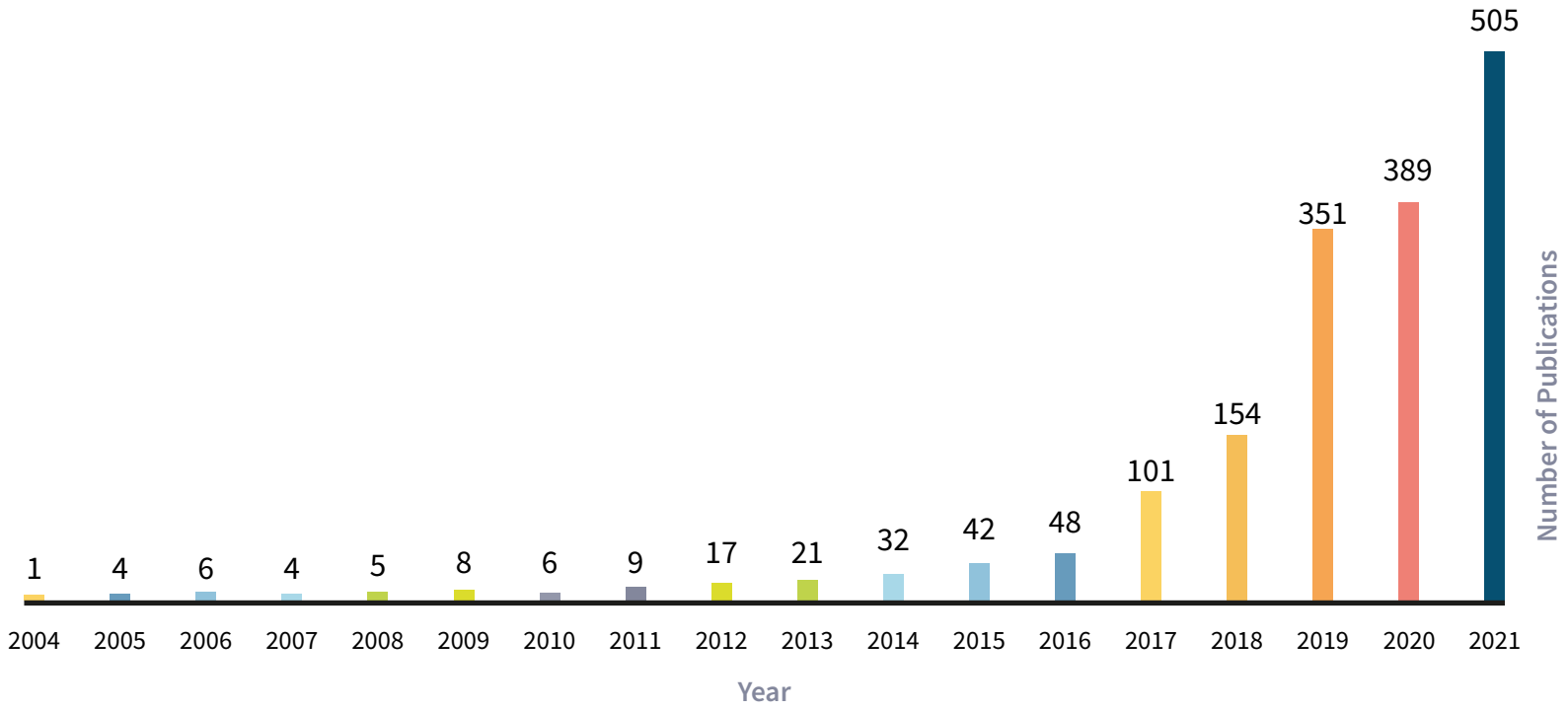
INTRO

Despite being a young private university, DIU has achieved remarkable success in education and research since its inception. This chapter will highlight the research activities and achievements of Daffodil International University over the past few years as well as the research trends of the four major disciplines that strengthen the overall research culture of this university.

CHAPTER 02

DIU PUBLICATION TREND

Daffodil International University is striving to make tremendous progress in quality education and research. To become a full-fledged research university, DIU is committed to conducting research as a central part of its mission. Consequently, DIU reached the milestone of publishing about 1800 research articles in Scopus, the largest abstract and citation database of peer-reviewed literature (e.g., scientific journals, books and conference proceedings) within very short period of time. It may be noted that since the establishment of the division of research in 2017, the number of publications has started to increase rapidly (see in the figure below). Consequently, DIU obtained the 1st position among Private Universities for its ISI / Scopus indexed publications in 2019 and 2020 and 3rd and 5th positions in 2019 and 2020 repectively among private and public universities in Bangladesh.

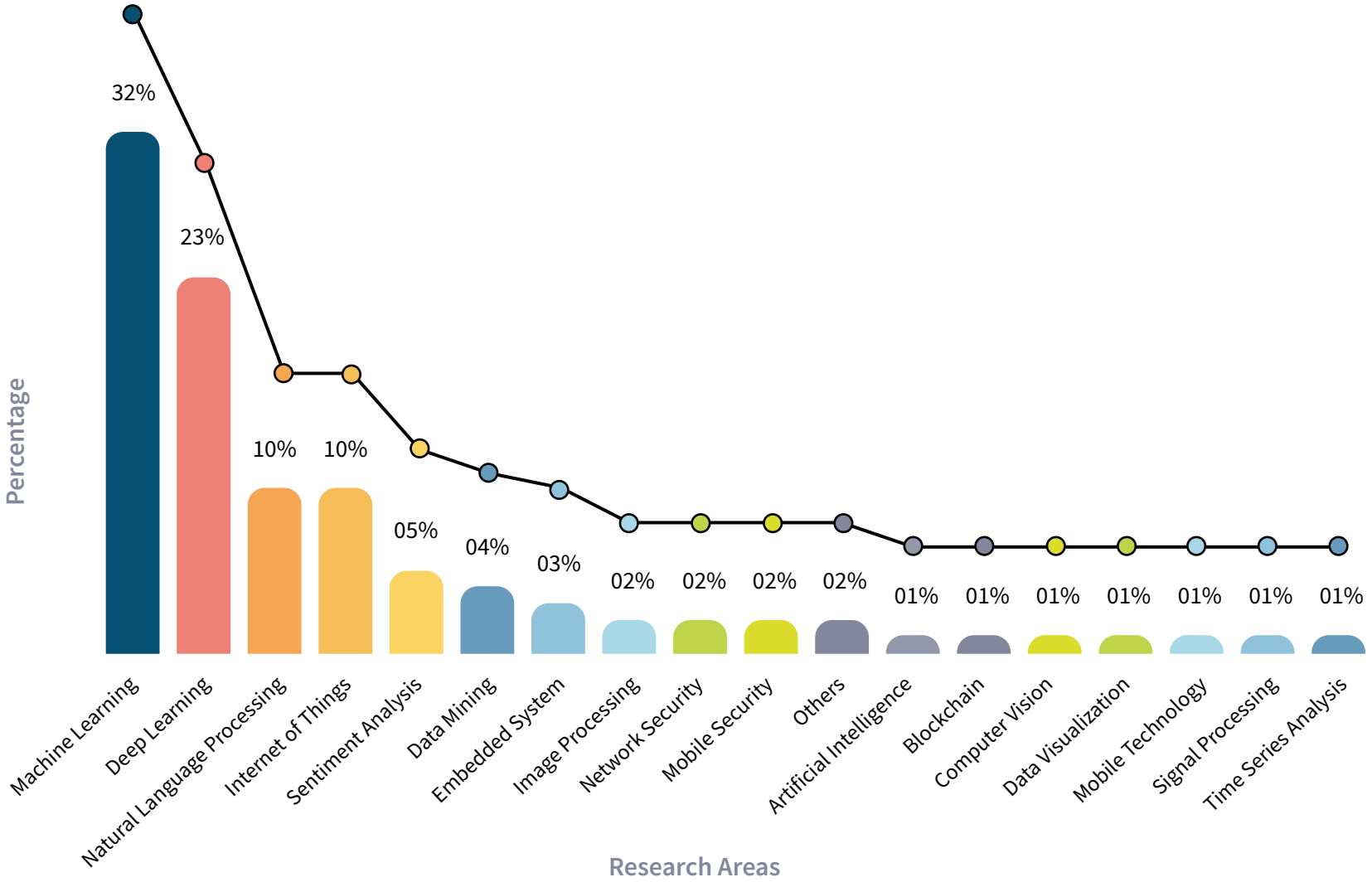


At the same time, DIU has started to take place in various prestigious rankings in the world e.g., QS World University Rankings (Asia), Times Higher Education Impact Rankings, UI Greenmetric Rankings, etc. Currently, DIU maintains academic and research collaborations with about 400 universities worldwide. This achievement indicates the excellence and quality of scientific research articles at DIU.

CHAPTER 02

DISCIPLINE WISE RESEARCH TREND

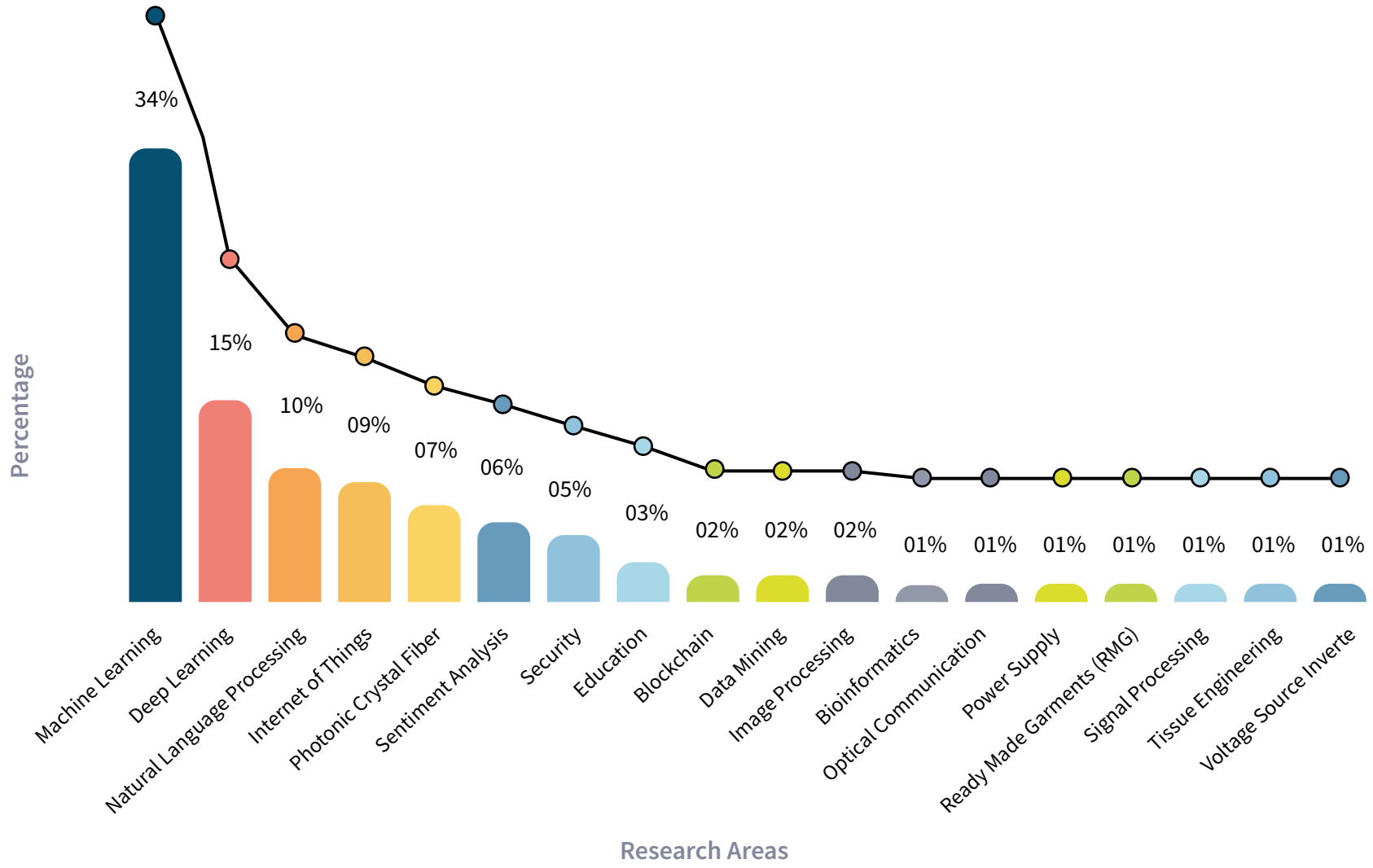
(COMPUTER SCIENCE AND INFORMATION SYSTEM)



CHAPTER 02

DISCIPLINE WISE RESEARCH TREND

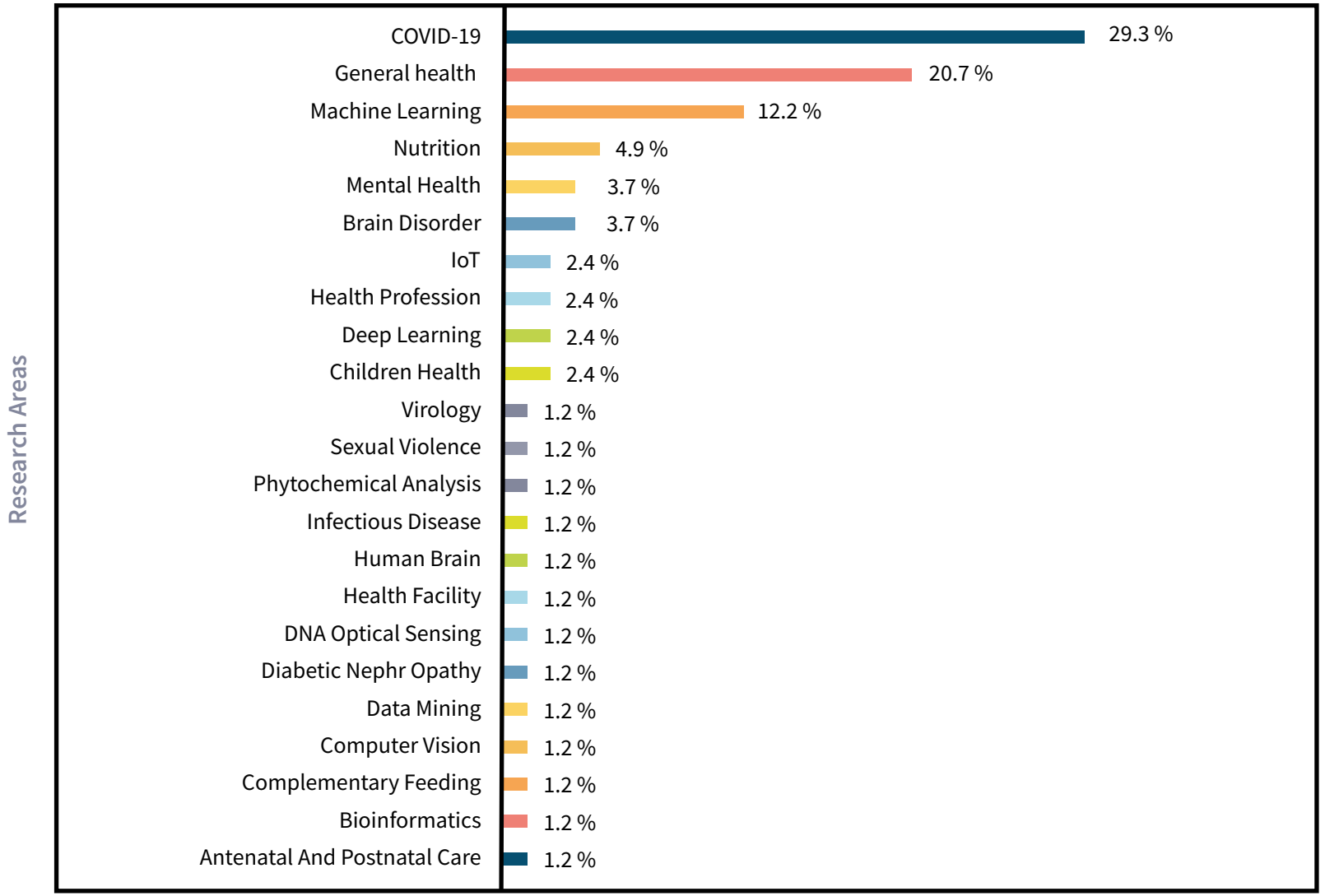
(ENGINEERING)



CHAPTER 02

DISCIPLINE WISE RESEARCH TREND

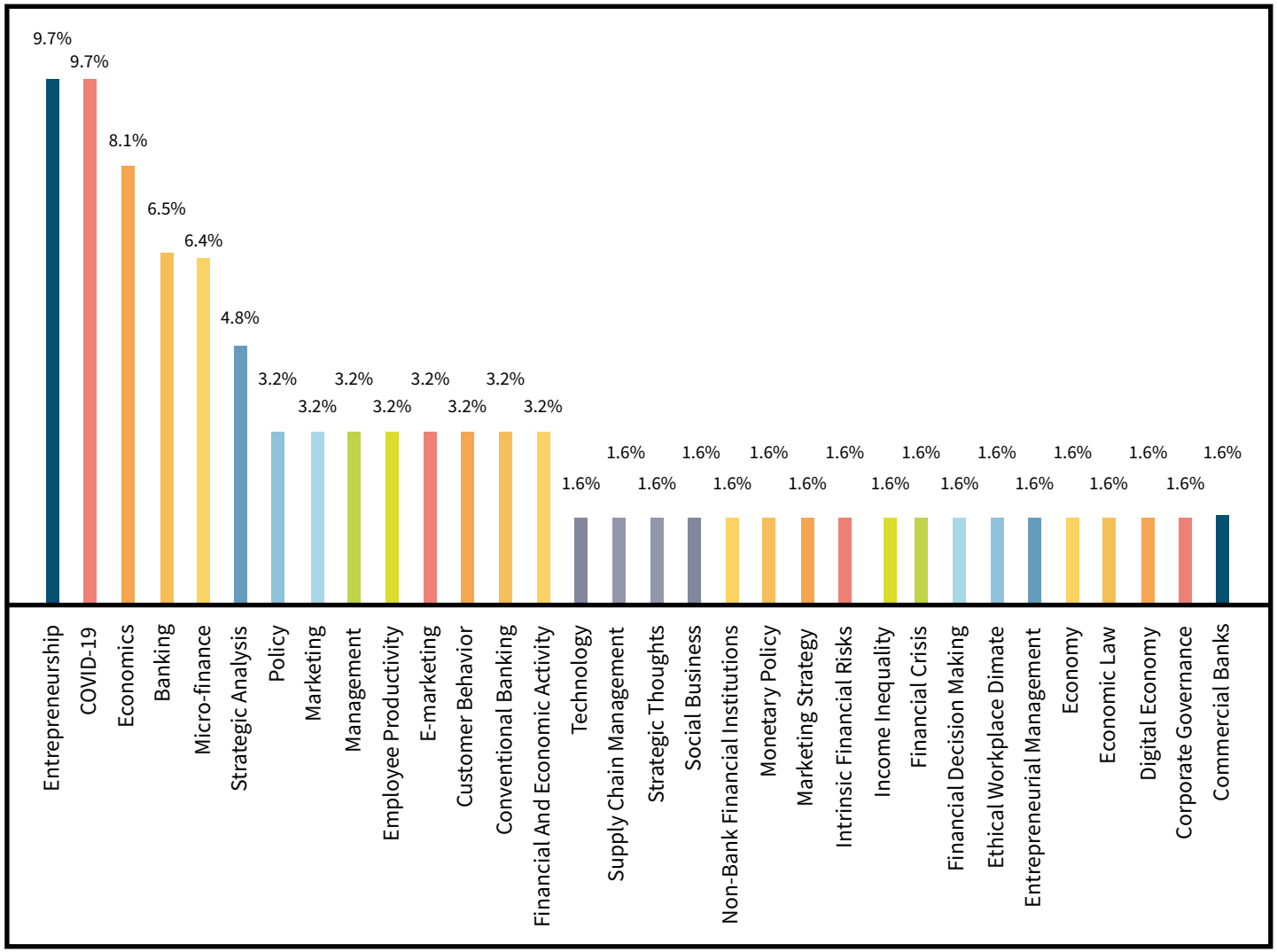
(PUBLIC HEALTH)



CHAPTER 02

DISCIPLINE WISE RESEARCH TREND

(BUSINESS INFORMATION TECHNOLOGY)



CHAPTER 3

INTERNATIONAL RESEARCH ADVANCEMENT

INTRO

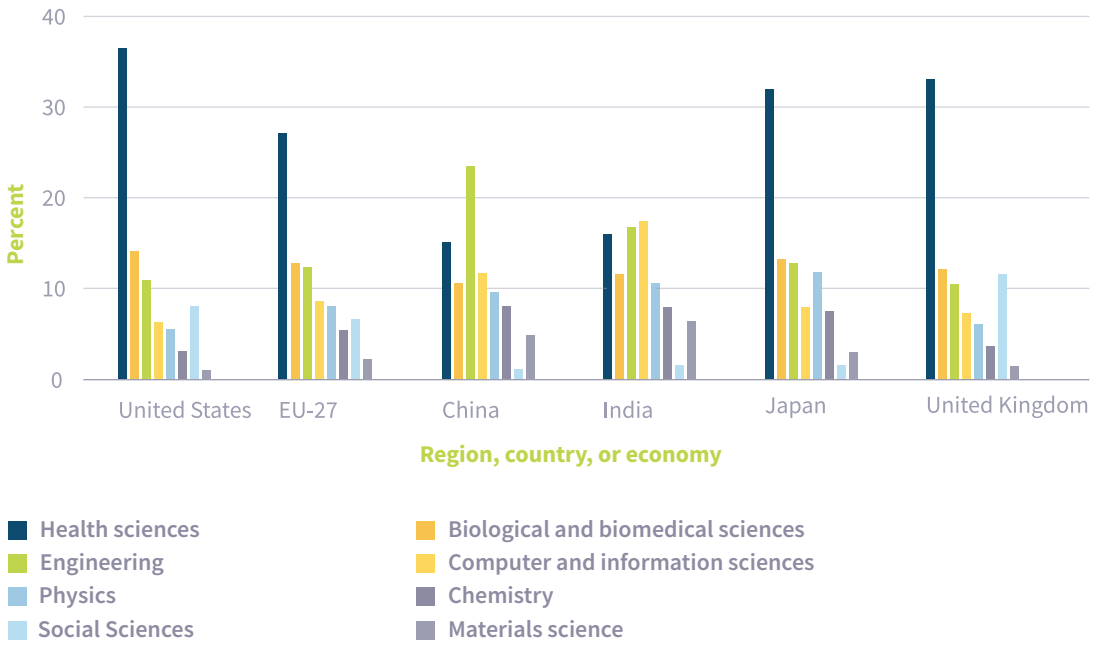
This chapter is organized into three major sections such as (i) International Research Direction (ii) Discipline Specific Research Areas and (iii) Discipline Specific Research Innovations. The key objective is to highlight the global research innovations, especially in four major research disciplines : (a) Computer Science and Information System, (b) Public Health, (c) Business Information Technology and (d) Environmental and Earth Science.

CHAPTER 03

INTERNATIONAL RESEARCH DIRECTIONS | COUNTRY WISE VARIOUS DISCIPLINES

A recent report [1] says that peer-reviewed science and engineering (S&E) journal articles and conference papers, grew about 4% annually over the last ten years, meaning that the international nature of research continues to grow and create new knowledge. The U.S. National Science Foundation (NSF)' has released data showing the publication output reached 2.9 million articles in 2020 with over 90% of the total from countries with high-income and upper-middle-income economies. Since 1996, output has consistently grown for countries with high-income economies, such as the United States, Germany, and the United Kingdom (UK), expanding from a large base number of publications. The report [2] also stated that the worldwide growth of publication output, from 1.9 million in 2010 to 2.9 million in 2020, was led by four geographically large countries. China (36%), India (9%), Russia (6%), and the United States (5%) together accounted for about half the increase in publications over this period. The distribution of publications by field (the figure on the right coloumn) shows that health sciences are the largest field of research globally (25% of publications in 2020). Likely due to COVID-19, health sciences publications grew 16%, and biological and biomedical sciences publications grew 15% from 2019 to 2020, far surpassing their previous 2009–19 compound annual growth rates of 3% for each. In the United States, the European Union (EU-27), the UK, and Japan, health sciences publication output far exceeds that of any other field. The United States, the UK, and the EU-27 have the highest proportions of articles in the social sciences of the six countries and regions. In China, the largest research area is engineering (24%), followed by health sciences (15%) and computer and information sciences (12%). The largest scientific field for publication output in India is computer sciences (18%). Japan has a portfolio with health sciences (32%) at the top, followed by biological and biomedical sciences (13%) and engineering (13%).

S&E RESEARCH PORTFOLIOS, BY EIGHT LARGEST FIELDS OF SCIENCE AND BY SELECTED REGION, COUNTRY, OR ECONOMY : 2020



Note(s):
Articles refer to publications from a selection of conference proceedings and peer-reviewed journals in S&E fields from Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. Articles are credited on a fractional count basis (i.e., for articles from multiple countries, each country receives fractional credit on the basis of the proportion of its participating authors).

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | COMPUTER SCIENCE AND INFORMATION SYSTEM

1. Artificial Intelligence

2. Algorithm And Complexity

3. Security, Privacy and Cryptography

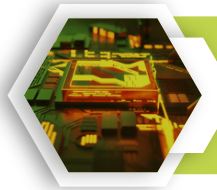
4. Natural Language Processing

5. Robotics and Automations

6. Human Computer Interaction

7. Programming Language

8. Quantum Computing



9. Computational Biology

10. Computer Architecture

11. System and Networking

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | COMPUTER SCIENCE AND INFORMATION SYSTEM

1. ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is a broad field of computer science concerned with establishing intelligent computers capable of performing tasks that usually require human intelligence. AI addresses a wide range of issues in this fast-expanding discipline, enhancing how machines learn, anticipate, and control while also making them secure, resilient, and trustworthy [3].

2. ALGORITHM AND COMPLEXITY

Algorithms are fundamental objects of study in computer science. The Algorithms and Complexity research theme mainly focuses on the mathematical modelling and analysis of algorithmic processes [4]. Moreover, research in algorithms and complexity theory includes determining the inherent difficulty of computational problems, classifying problems according to this inherent difficulty, and designing and analyzing algorithms that use computational resources as efficiently as possible [5].

3. SECURITY, PRIVACY AND CRYPTOGRAPHY

Computer security has been among researchers' interests for many years, along with related topics such as privacy, safety, cryptography and maintainability. Access controls, operating-systems security, protocols, cryptology, formal methods, hardware design, biometrics and usability, etc. are the key research sub-areas in this field [6]. Furthermore, researchers can apply these techniques (related to computer security) to a wide range of application domains, such as blockchains, cloud systems, Internet privacy, machine learning, and Iot devices, reflecting the growing importance of security in many contexts [7].

4. NATURAL LANGUAGE PROCESSING

Natural language processing (NLP) refers to the branch of computer science—and more specifically, the branch of artificial intelligence or AI—concerned with giving computers the ability to understand text and spoken words in much the same way human beings can [8]. The aim of Natural Language Processing is to develop computational models for analyzing and generating human language. Research in the Department encompasses many areas of NLP, ranging from fundamental theory to real-world applications. The models we develop are mainly based on modern machine learning techniques [9].

5. ROBOTICS AND AUTOMATIONS

Robotics and Automation encompasses the fundamental challenges introduced by systems that either move autonomously or are made mobile by human movement through wearable technology. The research spans issues related to how to make these systems more efficient, how to design algorithms that control and coordinate autonomous mobility and communication, and how to devise suitable machine learning models to analyze the data produced by them [10].

6. HUMAN COMPUTER INTERACTION

The key purpose of the human computer interaction is to create systems that enhance human experience. Human-Computer Interaction (HCI) is a rapidly expanding area of research and development that has transformed the way we use computers in the last thirty years. Research topics and areas include augmented-reality, collective action, computer-mediated communication, computer-supported collaborative work, crowdsourcing and social computing, cyberlearning and future learning technologies, inclusive technologies and accessibility, interactive audio, mixed-initiative systems, mobile interaction design, multi-touch interaction, social media, social networks, tangible user interfaces, ubiquitous computing, and user-centered design [11].

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | COMPUTER SCIENCE AND INFORMATION SYSTEM

7. PROGRAMMING LANGUAGE

Research in the Programming, Logic, and Semantics group is centred around the study of programming languages, logics, and mathematical models, addressing hardware, software, and networks. It spans a wide range of applied and theoretical work: programming language design, compilers, and program analysis; the development of interactive theorem provers and automatic proof procedures; the formal verification of computational systems; and semantic models using techniques such as structural operational semantics, type systems, domain theory, category theory, finite model theory and linear logic. Work is in progress on the underlying mathematical structures of these, and on their application to the study of higher-order typed programming languages; object-based languages; low-level machine languages; foundational languages for concurrent, distributed and mobile computation; hardware description languages; security and networking problems; database theory; and computational complexity [12].

8. QUANTUM COMPUTING

Quantum computers harness the unique behavior of quantum physics—such as superposition, entanglement, and quantum interference—and apply it to computing. This introduces new concepts to traditional programming methods [13]. Quantum computing has the potential to transform a whole host of technologies, from cryptography to artificial intelligence (AI). The key research areas of within quantum computer, including but not limited to: quantum error correction and fault tolerance, quantum complexity, quantum algorithms, quantum information theory, spin-based quantum information processing, nanoelectronics-based quantum information processing, optical quantum information processing, quantum cryptography, ultracold atoms and trapped ions, etc. [14].

9. COMPUTATIONAL BIOLOGY

Broadly speaking, computational biology is the application of computer science, statistics, and mathematics to problems in biology. Computational biology spans a wide range of fields within biology, including genomics/genetics, biophysics, cell biology, biochemistry, and evolution [15]. Moreover, researchers with diverse background in areas of computer science, including machine learning, algorithms, natural language processing, bioinformatics, and structural biology can contribute their methodologies to disparate biological problems such as prediction of patient risk, models of analysis of clinical data, gene function characterization, genome analysis, and understanding of protein structure, etc [16].

10. COMPUTER ARCHITECTURE

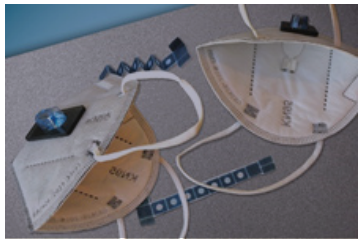
Computer architecture is a specification describing how hardware and software technologies interact to create a computer platform or system. Nowadays, research on Computer Architecture considers traditional general-purpose CPUs, GPUs, and accelerators for areas like machine learning, artificial intelligence, scientific computing and data processing [17]. Moreover, researchers try to implement computation in the physical world by designing processors that are faster, more efficient, easier to program, and secure.

11. SYSTEM AND NETWORKING

Computer networks allow computers to communicate with one another, and provide the fundamental infrastructures supporting our modern society. Computer networking covers a variety of topics, including the design of novel architectures; the scalability, efficiency, reliability, and security of existing systems; and the tools and languages to build and verify the correctness of such systems [18].

CHAPTER 03

DISCIPLINE SPECIFIC INNOVATIONS | COMPUTER SCIENCE AND INFORMATION SYSTEM



DEVELOPING A COVID-DETECTING FACE MASK

Engineers at MIT and Harvard University designed a prototype face mask that can diagnose the person wearing the mask with Covid-19 in about 90 minutes. The masks are embedded with tiny, disposable sensors that can be fitted into other face masks and could also be adapted to detect other viruses[19].

USING ARTIFICIAL INTELLIGENCE TO GENERATE 3D HOLOGRAMS IN REAL-TIME

Computer scientists developed a deep-learning-based system that allows computers to create holograms almost instantly. The system could be used to create holograms for virtual reality, 3D printing, medical imaging, and more — and it's efficient enough to run on a smartphone[20].

GO VIRAL!

It's a new game developed by Cambridge psychologists in partnership with the UK Government? The game gives players a taste of the techniques and motivations behind the spread of coronavirus misinformation – "inoculating" them against its influence[21].

TRAINING AUTONOMOUS VEHICLES USING REAL-LIFE HUMAN BEHAVIOR

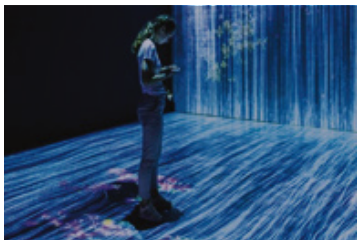
Driver less cars are on their way – there's little doubt about that. But before they hit the UK's roads, they need to be tested in realistic simulations to ensure that this transformative technology will be a safe and positive addition to lives[22].

WORLD FIRST FOR AI AND MACHINE LEARNING TO TREAT COVID-19 PATIENTS WORLDWIDE

Addenbrooke's Hospital in Cambridge along with 20 other hospitals from across the world and healthcare technology leader, NVIDIA, have used artificial intelligence (AI) to predict COVID-19 patients' oxygen needs on a global scale. The research was sparked by the pandemic and set out to build an AI tool to predict how much extra oxygen a COVID-19 patient may need in the first days of hospital care, using data from across four continents[23].

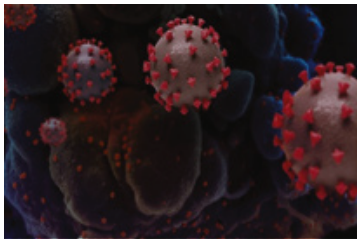
'TRANSFORMATIONAL' APPROACH TO MACHINE LEARNING COULD ACCELERATE SEARCH FOR NEW DISEASE TREATMENTS

The method, called transformational machine learning (TML), was developed by a team from the UK, Sweden, India and Netherlands. It learns from multiple problems and improves performance while it learns. TML could accelerate the identification and production of new drugs by improving the machine learning systems which are used to identify them. The results are reported in the Proceedings of the National Academy of Sciences[24].



MACHINE LEARNING MODELS FOR DIAGNOSING COVID-19 ARE NOT YET SUITABLE FOR CLINICAL USE

Researchers have found that out of the more than 300 COVID-19 machine learning models described in scientific papers in 2020, none of them is suitable for detecting or diagnosing COVID-19 from standard medical imaging, due to biases, methodological flaws, lack of reproducibility, and 'Frankenstein datasets.'[25]



CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | PUBLIC HEALTH

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | PUBLIC HEALTH

BIOSTATISTICS

Biostatistics involves the theory and application of statistical science to analyze public health problems and to further biomedical research[26]. Moreover, Investigators might also apply existing methodologies to new application areas in innovative ways. Some of the core sub-areas of Biostatistics are[27],[28]:

- Data science and its application to human health
- Categorical data analysis related to health
- Medical imaging
- Statistical Genetics and Computational Biology
- Gene-treatment interactions
- Developing new/improved epidemiologic methods
- Prediction modeling of health events at population and individual levels etc.

EPIDEMIOLOGY

Epidemiology is the is a fundamental science of public health. It is the study of factors affecting health and illness in communities and populations. Epidemiologic research methods form the cornerstone of public health and epidemiological researchers seek to improve health and reduce risk factors for disease and illness[29]. Some of the core sub-areas of Epidemiology are[30]:

- Cancer Epidemiology
- Cardiovascular Epidemiology
- Environmental/Occupational Epidemiology
- Chronic diseases
- Injury Epidemiology
- Pharmacoepidemiology
- Social Epidemiology
- Genetic Epidemiology etc.

GLOBAL HEALTH

Global health is concerned with improving health and well-being across diverse populations, particularly those in which poor health outcomes are concentrated[31]. The principles, approaches and tools used in global health are applicable across low-, middle-, and high-income countries. Global Health research spans a wide range of interrelated and complex public health topics such as[32]:

- Infectious and chronic diseases
- Water and development
- Nutrition and health
- Community-based primary health care
- Health systems and policies
- Malaria
- Non-Communicable Diseases
- Antimicrobial Resistance
- Intimate Partner Violence

INFECTIOUS DISEASES

Infectious diseases are one of the main drivers of global mortality and morbidity and are a major factor in health inequities[33]. At present researchers are working with a wide variety of areas related to infectious diseases such as[34]:

- Malaria
- Antibiotic resistance
- Microbiome
- Viral Hepatitis
- Sexually transmitted diseases
- Infectious Diseases and Long-Term Care
- Tuberculosis (TB)

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Environmental health relates to how air, water, food and our physical environment can affect our health, for better or for worse. Occupational health relates to keeping people healthy at work. At present researchers are working with a wide variety of areas related Environmental and Occupational Health such as[35],[36]:

- Air Pollution and Cardiorespiratory Diseases
- Antimicrobial Resistance and Infectious Disease
- Global Environmental Change
- Environmental Chemistry, Microbiology and Ecology
- Environmental Nanoscience
- Meteorology and Climate
- Environmental Epidemiology
- Occupational Safety
- Water reuse and sustainability
- Environmental carcinogens
- Climate change and energy impacts on health
- Environmental health disparities etc.

MENTAL HEALTH

Mental health is our ability to think, feel and behave in a way that helps us to perform at our best. It includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. Consequently, mental and physical health are equally important components of overall health[37]. Some of the key research areas are presented below[38],[39]:

- Mental Health and Aging
- Mental Health and COVID-19
- Mental Health in the Workplace
- Methods
- Psychiatric Epidemiology
- School-based Mental Health
- Psychiatric and Behavioral Genetic Epidemiology
- Global Mental Health
- Violence
- Old Age Psychiatry
- Neuropsychiatric disorders
- Brain Mapping

CHAPTER 03

DISCIPLINE SPECIFIC INNOVATIONS | PUBLIC HEALTH

DEPLOYING MACHINE LEARNING TO IMPROVE MENTAL HEALTH

MIT scientist Rosalind Picard collaborates with clinicians to develop tools for mental health care delivery. Using wearable devices and smartphones of study participants, researchers can gather detailed data on participants' skin conductance and temperature, heart rate, activity levels, socialization, personal assessment of depression, sleep patterns, and more. Their goal is to develop machine learning algorithms that can intake this tremendous amount of data, and make it meaningful — identifying when an individual may be struggling and what might be helpful to them. They hope that their algorithms will eventually equip physicians and patients with useful information about individual disease trajectory and effective treatment[40].

UNDERSTANDING AIR POLLUTION FROM SPACE

Climate change and air pollution are interlocking crises that threaten human health. Reducing emissions of some air pollutants can help achieve climate goals, and some climate mitigation efforts can in turn improve air quality. Arlene Fiore uses satellite data paired with ground observations to refine our understanding of ozone smog and interactions with meteorology and climate[42].

A 5-PART TOOLKIT FOR FOSTERING WORKER WELL-BEING

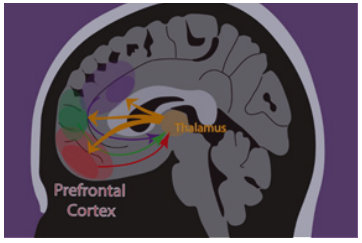
Improving worker health and well-being has traditionally been viewed as the responsibility of the employee, particularly when it comes to adapting to workplace stressors. This toolkit includes actionable steps and resources to help managers give employees more control over their work, cut back on excessive work demands, and improve social relationships in the workplace[44].

MACHINE LEARNING METHOD MAY LEAD TO OPTIMAL CANCER TREATMENT DECISIONS

The goal of the research was to develop and train new machine-learning methods to predict optimal treatment based on big data from large scale preclinical screens in patient-derived xenografts, or PDXs. The researchers discovered their novel approach outperformed existing machine learning methods that do not leverage the unique structure of PDX data[41].

HOW THE BRAIN DEALS WITH UNCERTAINTY

Neuroscientists at MIT's McGovern Institute for Brain Research have homed in on key brain circuits that help guide decision-making under conditions of uncertainty. By studying how mice interpret ambiguous sensory cues, they've found neurons that stop the brain from using unreliable information[43].



USING MACHINE LEARNING TO TRACK THE PANDEMIC'S IMPACT ON MENTAL HEALTH

Textual analysis of social media posts finds users' anxiety and suicide-risk levels are rising, among other negative trends. Dealing with a global pandemic has taken a toll on the mental health of millions of people. A team of MIT and Harvard University researchers has shown that they can measure those effects by analyzing the language that people use to express their anxiety online[45].

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | BUSINESS IT

- ACCOUNTING & CONTROL
- DECISION SCIENCE
- OPERATIONS MANAGEMENT
- FINANCE
- MARKETING
- ORGANIZATIONAL BEHAVIOR
- ECONOMICS & POLICY
- ORGANIZATIONAL THEORY AND INFORMATION SYSTEMS

CHAPTER 3

DISCIPLINE SPECIFIC RESEARCH AREAS | BUSINESS IT

ACCOUNTING & CONTROL

Accounting is at the forefront of research and teaching in the areas of information distribution and usage in markets and within companies. Accounting faculty research examines themes such as economics, finance, statistics, employs analytical, empirical methodologies, etc. to study the following areas[46],[47] : financial reporting, standard-setting and valuation, management accounting, the pricing of securities in capital markets, the design of performance measurement and incentive systems, best practices in corporate governance and executive compensation, strategic management decisions, performance management, target setting, management control, corporate governance, executive compensation and incentives, audit and earnings quality, sell-side analysts, early-stage entity accounting, etc.

ECONOMICS & POLICY

In Economics & Policy, researchers analyze how economics can improve economic growth and company performance, as well as how public policy can be improved to enhance economic growth, sustainability and the quality of life[49]. This area includes a broad range of topics[50] including economic theory, industrial organization, labor economics, macroeconomics, econometrics, environmental economics, international trade, political economy, behavioral economics and the role of governments on business etc.

FINANCE

Finance is an applied branch of economics that studies the ways in which individuals, business entities, and other organizations allocate resources over time and make decisions in the presence of uncertainty[51]. The key research areas of within finance, including but not limited to[52]: corporate finance, corporate governance, asset management, asset pricing, valuation methods and market efficiency, alternative finance, behavioral finance, financial markets etc.

MARKETING

Marketing examines how complex markets function from the standpoint of how firms, consumers, and other stakeholders interact. The field of marketing is an exciting one for research due to technological advances and constantly changing behavior. Some of the sub-research areas of marketing are consumer behavior, firm behavior, marketing practice, branding, pricing, new product development, advertising, marketing communication etc.[53]

ORGANIZATIONAL BEHAVIOR

Organizational Behavior (OB) is the academic study of how people behave in groups, and its concepts are mostly used to improve the efficiency of enterprises. Researchers in OB are working to improve the knowledge of how to lead and manage to improve personal and organizational effectiveness focusing on organizational changes and challenges arising from today's increasingly global and more competitive economy[54]. Some of the key research areas[55],[56] in OB are organizational behavior, organizational theory, organizational psychology, organizational sociology, leadership & emotions, creativity & innovation, cross-cultural management, psychometric measurement, strategic leadership, etc.

TECHNOLOGY & OPERATIONS MANAGEMENT

The field of operations management has changed dramatically due to growing world economy, significant advances in information and processing technology, and continued growth of services[57]. The Technology and Operations Management Area (TOM) focuses on creating global standards through innovative product and process design, project management as well as cost capture through effective supply chain management. Some of the sub-research areas[58] in TOM are innovation and new product development, healthcare operations, operations strategy, supply chain management, decision-making and behavior analytics etc.

DECISION SCIENCE

Decision Sciences is an interdisciplinary field that draws on economics, machine learning, statistical decision theory, operations research, forecasting, behavioral decision theory, and cognitive psychology[48]. Some of the current research interests of this area are decision making under uncertainty Individual and group decision making, machine learning and AI.

ORGANIZATIONAL THEORY & INFORMATION SYSTEMS

The Organizational Theory & Information Systems focuses on both organizational theory and the dynamic relationship between information technologies and organizations. In developed and developing country contexts, a wide range of research interests include individual, group, and organizational levels of analysis such as group behavior in organizations leadership organizational and institutional creation, maintenance and change, Information systems and organizational change, corporate social responsibility, strategic and international human resource management, entrepreneurship and innovation, knowledge translation and service innovation, people and organizational effectiveness etc [74].

CHAPTER 03

DISCIPLINE SPECIFIC INNOVATIONS | BUSINESS IT

THE DATA SCIENCE MANAGEMENT PROCESS

It is increasingly clear that companies and government agencies do not know how to manage data science at the enterprise level. Many are still stuck doing pilots. Some take on projects that are beyond their capabilities. And too often, excellent work dies on the vine during implementation. Companies must take action to address the structural and process issues that hold them back. So, data science initiatives should be integrated with the overall business strategy, and then overseen by an intermediary group that works between the company and its data scientists[59].

THE HUMAN FACTOR IN AI-BASED DECISION-MAKING

Facing identical AI inputs, individuals make entirely different choices based on their own decision-making styles[60]. AI now has a firm footing in organizations' strategic decision-making processes. Five years ago, less than 10% of large companies had adopted machine learning or other forms of AI, but today 80% of them make use of the technology[61].

HOW ARTIFICIAL INTELLIGENCE WILL IMPACT THE ACCOUNTING INDUSTRY?

Artificial Intelligence (AI) extends the capabilities of computing to a whole new level. It lets systems to make predictions and make changes accordingly – just as humans would. It enables computers to perform machine-based learning, which earlier was left to humans. In the accounting profession, where people deal with rote tasks, AI is a replacement of human capabilities for the better[62].

HOW ARTIFICIAL INTELLIGENCE IS TRANSFORMING DIGITAL MARKETING

AI marketing is a method of leveraging technology to improve the customer journey. It can also be used to boost the return on investment (ROI) of marketing campaigns. In the world of digital marketing, AI can streamline and optimize marketing campaigns. It can also eliminate the risk of human error[63].

CHAPTER 03

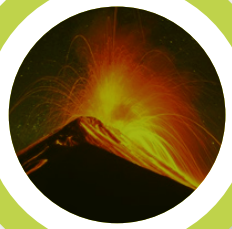
DISCIPLINE SPECIFIC RESEARCH AREAS | ENVIRONMENTAL AND EARTH SCIENCE

DATA SCIENCE

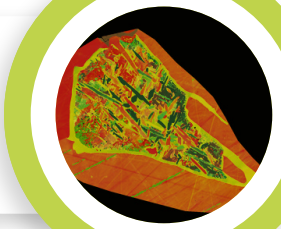
PALAEOBIOLOGY AND EVOLUTION

ATMOSPHERES, OCEANS, AND CLIMATE DYNAMICS

EARTH SYSTEM SCIENCE



GEOPHYSICS & GEODYNAMICS



MINERAL SCIENCES

CHAPTER 03

DISCIPLINE SPECIFIC RESEARCH AREAS | ENVIRONMENTAL AND EARTH SCIENCE

DATA SCIENCE

Today's Earth science is data driven. Data science is using to understand the earth. Data has become cheaper, faster, and more central to analyzing the broad scope of work carried out by Earth scientists than ever before. The satellite and supercomputer are the tools of modern geoscientists whose research spans from climate change projections and earthquake simulations to energy resources optimization. They investigate causes of drought, design defenses against natural disasters, and blaze a path toward a renewable energy future[64].

GEOPHYSICS & GEODYNAMICS

Geophysics and geodynamics seek to understand the structure and dynamics of Earth's interior; the response of the lithosphere to loading; the mechanics of earthquakes; and the fluid dynamics of geological materials[66]. Some of the key research areas are[66],[67]:

- Geodynamics and tectonics
- Continental growth and evolution
- Rock rheology & magnetism
- Melt generation
- Earthquake mechanics
- Dynamics of fluid-solid systems
- Mineral physics
- Marine geophysics etc.

EARTH SYSTEM SCIENCE

Earth System Science works to understand, predict, and respond to human-caused and natural environmental change at local to global scales. To do so, researchers investigate the complexity of the global system, including the interactions, synergies, and feedbacks that link the oceans, atmosphere, land surfaces, and freshwater systems[70].

ATMOSPHERES, OCEANS, AND CLIMATE DYNAMICS

The goal of research in atmosphere, ocean and climate dynamics is a better understanding of Earth's weather and climate on time scales from a few days to millions of years. The motivation to understand the ocean-atmosphere system comes from both practical concerns and from fundamental scientific questions that remain unanswered. There are compelling societal needs for improved understanding of the atmosphere and oceans, and climate change in particular, presenting major challenges for the scientific and engineering communities[65].

PALAEOBIOLOGY AND EVOLUTION

The Palaeobiology and Evolution theme uses fossil evidence combined with modern biological and specimen imaging approaches to understand the evolution of life on planet Earth[68]. Research in this area involves novel interrogation of the early fossil record combined with leading-edge phylogenetic and morphometric techniques, and recognition of the powerful interplay between biological and planetary evolution[69].

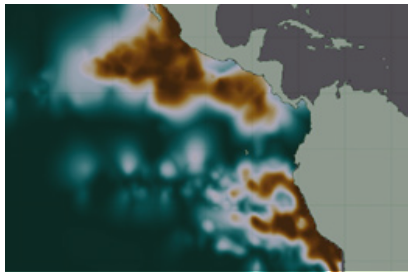
MINERAL SCIENCES

Mineral Sciences research seeks to understand the fundamental properties and behavior of minerals in the natural environment, and apply this knowledge to answer important questions about the Earth and beyond. Topics of current research include (but not limited to) [75]:

- Rock magnetism.
- Advanced materials for nuclear waste encapsulation.
- Mineral-water interactions at extreme conditions.
- Paleomagnetism and environmental magnetism.
- Elasticity and anelasticity of minerals in Earth's crust, mantle and core.
- Biomineralization and paleoclimate proxies etc..

CHAPTER 03

ENVIRONMENTAL AND EARTH SCIENCE | CUTTING EDGE RESEARCH & INNOVATION



SCIENTISTS BUILD NEW ATLAS OF OCEAN'S OXYGEN-STARVED WATERS

MIT scientists have generated the most detailed, three-dimensional "atlas" of the largest ODZs in the world. The new atlas provides high-resolution maps of the two major, oxygen-starved bodies of water in the tropical Pacific. These maps reveal the volume, extent, and varying depths of each ODZ, along with fine-scale features, such as ribbons of oxygenated water that intrude into otherwise depleted zones. This 3D maps may help researchers track and predict the ocean's response to climate change[71].

DINOSAURS MAY HAVE LIVED IN SOCIAL HERDS AS EARLY AS 193 MILLION YEARS AGO

Researchers from MIT, Argentina, and South Africa detail their discovery of an exceptionally preserved group of early dinosaurs that shows signs of complex herd behavior as early as 193 million years ago — 40 million years earlier than other records of dinosaur herding. Fossils indicate a communal nesting ground and adults who foraged and took care of the young as a herd, scientists say[72].

CLIMATE CHANGE IMPACTS ON PLANKTONIC FORAMINIFERA THROUGH TIME

New research from scientists of Oxford Earth Sciences shows that a key type of zooplankton's inability to adapt to climate change could have adverse implications for marine food chains across the world if a severe global warming event were to occur[73].

DENSE BONES ALLOWED SPINOSAURUS TO HUNT UNDERWATERE

Spinosaurus is the largest predatory dinosaur yet discovered, much larger than T. rex, but the way that it hunted has been a source of controversy for decades. Some scientists believe Spinosaurus could swim based on its skeleton, while others say it waded in the water like a heron. Palaeontologists from the Universities of Cambridge and Oxford, as well as the Field Museum in Chicago, have examined the density of their bones and compared them to creatures such as penguins, hippos, and alligators to help answer this puzzle. The team's analysis, published in the journal Nature, found that Spinosaurus and its close relative Baryonyx had dense bones that likely would have allowed them to submerge themselves underwater to hunt [76].

REFERENCES

[1] K. White, "Publications Output: U.S. Trends and International Comparisons | NSF - National Science Foundation (Executive Summary)", Ncses.nsf.gov, 2019. [Online]. Available: https://ncses.nsf.gov/pubs/nsb20206/executive-summary. [Accessed: 27- Mar- 2022].

[2] K. White, "Publications Output: U.S. Trends and International Comparisons | NSF - National Science Foundation (Publication Output by Country, Region, or Economy and Scientific Field)", Ncses.nsf.gov, 2019. [Online]. Available: https://ncses.nsf.gov/pubs/nsb20214/publication-output-by-country-region-or-economy-and-scientific-field. [Accessed: 27- Mar- 2022].

[3] "Artificial Intelligence and Machine Learning – MIT EECS", Eecs.mit.edu. [Online]. Available: https://www.eecs.mit.edu/research/explore-all-research-areas/artificial-intelligence-and-machine-learning/. [Accessed: 27- Mar- 2022].

[4] "Algorithms and Complexity | Department of Computer Science and Technology", Cst.cam.ac.uk. [Online]. Available: https://www.cst.cam.ac.uk/research/themes/algorithms-and-complexity. [Accessed: 27- Mar- 2022].

[5] "Department of Computer Science - research theme: Algorithms and Complexity Theory", Cs.ox.ac.uk. [Online]. Available: http://www.cs.ox.ac.uk/research/algorithms/index.html. [Accessed: 27- Mar- 2022].

[6] "Security and Cryptography – MIT EECS", Eecs.mit.edu. [Online]. Available: https://www.eecs.mit.edu/research/explore-all-research-areas/security-and-cryptography/. [Accessed: 27- Mar- 2022].

[7] "Security and Cryptography – MIT EECS", Eecs.mit.edu. [Online]. Available: https://www.eecs.mit.edu/research/explore-all-research-areas/security-and-cryptography/. [Accessed: 27- Mar- 2022].

[8] "What is Natural Language Processing?", Ibm.com. [Online]. Available: https://www.ibm.com/cloud/learn/natural-language-processing. [Accessed: 27- Mar- 2022].

[9] "Natural Language Processing | Department of Computer Science and Technology", Cst.cam.ac.uk. [Online]. Available: https://www.cst.cam.ac.uk/research/themes/natural-language-processing. [Accessed: 27- Mar- 2022].

[10] "Mobile Systems, Robotics and Automation | Department of Computer Science and Technology", Cst.cam.ac.uk. [Online]. Available: https://www.cst.cam.ac.uk/research/themes/mobile-systems-robotics-and-automation . [Accessed: 27- Mar- 2022].

REFERENCES

[11] "Human-Computer Interaction | Research | Computer Science | Northwestern Engineering", Mccormick.northwestern.edu. [Online]. Available: https://www.mccormick.northwestern.edu/computer-science/research/areas/human-computer-interaction.html. [Accessed: 27- Mar- 2022].

[12] "Programming Languages, Semantics and Verification | Department of Computer Science and Technology", Cst.cam.ac.uk. [Online]. Available: https://www.cst.cam.ac.uk/research/themes/programming-languages-semantics-and-verification . [Accessed: 27- Mar- 2022].

[13] "What is Quantum Computing | Microsoft Azure", Azure.microsoft.com. [Online]. Available: https://azure.microsoft.com/en-us/overview/what-is-quantum-computing/. [Accessed: 27- Mar- 2022].

[14] "Research | Institute for Quantum Computing", Institute for Quantum Computing. [Online]. Available: https://uwaterloo.ca/institute-for-quantum-computing/research. [Accessed: 27- Mar- 2022].

[15] "Computational Biology | Department of Computational Biology", Compbio.cornell.edu. [Online]. Available: https://compbio.cornell.edu/about/computational-biology/. [Accessed: 27- Mar- 2022].

[16] "Computational Biology - Research Areas — Department of Computer Science, University of Toronto", Department of Computer Science, University of Toronto. [Online]. Available: https://web.cs.toronto.edu/research/areas/computational-biomedicine. [Accessed: 27- Mar- 2022].

[17] "Computer Architecture | Department of Computer Science and Technology", Cst.cam.ac.uk. [Online]. Available: https://www.cst.cam.ac.uk/research/themes/computer-architecture. [Accessed: 27- Mar- 2022].

[18] "Systems and Networking – MIT EECS", Eecs.mit.edu. [Online]. Available: https://www.eecs.mit.edu/research/explore-all-research-areas/systems-and-networking/. [Accessed: 27- Mar- 2022].

[19]"New face mask prototype can detect Covid-19 infection", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2021/face-mask-covid-19-detection-0628. [Accessed: 27- Mar- 2022].

[20] "Using artificial intelligence to generate 3D holograms in real-time", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2021/3d-holograms-vr-0310. [Accessed: 27- Mar- 2022].

REFERENCES

[21] "Cambridge game ‘pre-bunks’ coronavirus conspiracies", University of Cambridge. [Online]. Available: https://www.cam.ac.uk/stories/goviral. [Accessed: 27- Mar - 2022].

[22] [2]S. Gillespie, "Training autonomous vehicles using real-life human behaviour", Research.ox.ac.uk, 2019 . [Online]. Available: https://www.research.ox.ac.uk/article/2019-06-19-training-autonomous-vehicles-using-real-life-human-behaviour. [Accessed: 27- Mar- 2022].

[23] "World first for AI and machine learning to treat COVID-19 patients worldwide", University of Cambridge. [Online]. Available: https://www.cam.ac.uk/research/news/world-first-for-ai-and-machine-learning-to-treat-covid-19-patients-worldwide. [Accessed: 27- Mar- 2022].

[24] "‘Transformational’ approach to machine learning could accelerate search for new disease treatments", University of Cambridge, 2019. [Online]. Available: https://www.cam.ac.uk/research/news/transformational-approach-to-machine-learning-could-accelerate-search-for-new-disease-treatments . [Accessed: 27- Mar- 2022].

[25] "Machine learning models for diagnosing COVID-19 are not yet suitable for clinical use", University of Cambridge. [Online]. Available: https://www.cam.ac.uk/research/news/machine-learning-models-for-diagnosing-covid-19-are-not-yet-suitable-for-clinical-use . [Accessed: 27- Mar- 2022].

[26] Department of Biostatistics. [Online]. Available: https://www.hsph.harvard.edu/biostatistics/ . [Accessed: 27- Mar- 2022].

[27] "Research - UNC Gillings School of Global Public Health", UNC Gillings School of Global Public Health. [Online]. Available: https://sph.unc.edu/bios/bios-research/ . [Accessed: 27- Mar- 2022].

[28] "Biostatistics | Public Health", Ualberta.ca. [Online]. Available: https://www.ualberta.ca/public-health/research/areas-of-research/biostatistics.html. [Accessed: 27- Mar- 2022].

[29] "Epidemiology | Public Health", Ualberta.ca. [Online]. Available: https://www.ualberta.ca/public-health/research/areas-of-research/epidemiology.html. [Accessed: 27- Mar- 2022].

[30] "Research - UNC Gillings School of Global Public Health", UNC Gillings School of Global Public Health. [Online]. Available: https://sph.unc.edu/epid/epidemiology-research/. [Accessed: 27- Mar- 2022].

REFERENCES

[31] "Global Health Research Projects | SPH", Bu.edu. [Online]. Available: https://www.bu.edu/sph/about/departments/global-health/global-health-research-projects/. [Accessed: 27- Mar- 2022].

[32] "Global Health | Public Health", Ualberta.ca. [Online]. Available: https://www.ualberta.ca/public-health/research/areas-of-research/global-health.html. [Accessed: 27- Mar- 2022].

[33] "Infectious Disease research | Yale School of Public Health", Research & Practice. [Online]. Available:https://ysph.yale.edu/public-health-research-and-practice/interdepartmental-foci/infectious-diseases/. [Accessed: 02- Apr- 2022].

[34] "Research & Specialty Topics - Johns Hopkins Medicine", Johns Hopkins Medicine. [Online]. Available: https://hopkinsinfectiousdiseases.jhmi.edu/research/ . [Accessed: 02- Apr- 2022].

[35] "Research Areas | Johns Hopkins Bloomberg School of Public Health", Johns Hopkins Bloomberg School of Public Health. [Online]. Available: https://publichealth.jhu.edu/departments/environmental-health-and-engineering/research-and-practice/research-areas. [Accessed: 02- Apr- 2022].

[36] "Faculty Research Interests | Texas A&M School of Public Health", Public-health.tamu.edu. [Online]. Available: https://public-health.tamu.edu/research/interests.html. [Accessed: 02- Apr- 2022].

[37] [Online]. Available: https://www.cdc.gov/. [Accessed: 02- Apr- 2022].

[38] "Research and Practice | Johns Hopkins Bloomberg School of Public Health", Johns Hopkins Bloomberg School of Public Health. [Online]. Available: https://publichealth.jhu.edu/departments/mental-health/research-and-practice. [Accessed: 02- Apr- 2022].

[39] "Our Research - Department of Psychiatry", Department of Psychiatry. [Online]. Available: https://www.psychiatry.cam.ac.uk/groups/. [Accessed: 02- Apr- 2022].

z "Deploying machine learning to improve mental health", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2022/deploying-machine-learning-improve-mental-health-rosalind-picard-0126. [Accessed: 02- Apr- 2022].

[40] "Deploying machine learning to improve mental health", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2022/deploying-machine-learning-improve-mental-health-rosalind-picard-0126. [Accessed: 02- Apr- 2022].

REFERENCES

[41] "Study shows new machine learning method may lead to optimal cancer treatment decisions - UNC Gillings School of Global Public Health", UNC Gillings School of Global Public Health. [Online]. Available: https://sph.unc.edu/sph-news/study-shows-new-machine-learning-method-may-lead-to-optimal-cancer-treatment-decisions/. [Accessed: 02- Apr- 2022].

[42] "Understanding air pollution from space", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2022/understanding-air-pollution-from-space-arlene-fiore-0109. [Accessed: 02- Apr- 2022].

[43] "How the brain deals with uncertainty", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2021/how-the-brain-deals-with-uncertainty-1014. [Accessed: 02- Apr- 2022].

[44] "A 5-part toolkit for fostering worker well-being | MIT Sloan", MIT Sloan. [Online]. Available: https://mitsloan.mit.edu/ideas-made-to-matter/a-5-part-toolkit-fostering-worker-well-being. [Accessed: 02- Apr- 2022].

[45] "Using machine learning to track the pandemic's impact on mental health", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2020/covid-19-impact-mental-health-1105. [Accessed: 02- Apr- 2022].

[46] "Accounting", Stanford Graduate School of Business. [Online]. Available: https://www.gsb.stanford.edu/faculty-research/faculty/academic-areas/accounting. [Accessed: 02- Apr- 2022].

[47] "Accounting", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/accounting/. [Accessed: 02- Apr- 2022].

[48] "Decision Sciences | INSEAD", INSEAD. [Online]. Available: https://www.insead.edu/faculty-research/academic-areas/decision-sciences. [Accessed: 02- Apr- 2022].

[49] "Economics & Policy", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/economics-policy/. [Accessed: 02- Apr- 2022].

[50] z"Economics", Stanford Graduate School of Business. [Online]. Available: https://www.gsb.stanford.edu/faculty-research/faculty/academic-areas/economics. [Accessed: 02- Apr- 2022].

REFERENCES

[51] "Finance", Stanford Graduate School of Business. [Online]. Available: https://www.gsb.stanford.edu/faculty-research/faculty/academic-areas/finance. [Accessed: 02- Apr- 2022].

[52] "Finance", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/finance/. [Accessed: 02- Apr- 2022].

[53] "Marketing", Stanford Graduate School of Business. [Online]. Available: https://www.gsb.stanford.edu/faculty-research/faculty/academic-areas/marketing. [Accessed: 02- Apr- 2022].

[54] Investopedia. [Online]. Available: https://www.investopedia.com/. [Accessed: 02- Apr- 2022].

[55] "Organisational Behaviour", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/organisational-behaviour/. [Accessed: 02- Apr- 2022].

[56] "Organizational Behavior - Faculty & Research - Harvard Business School", Hbs.edu. [Online]. Available: https://www.hbs.edu/faculty/units/ob/Pages/default.aspx. [Accessed: 02- Apr- 2022].

[57] "Technology & Operations Management | INSEAD", INSEAD. [Online]. Available: https://www.insead.edu/faculty-research/academic-areas/technology-operations-management. [Accessed: 02- Apr- 2022].

[58] "Operations & Technology Management", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/operations-technology-management/. [Accessed: 02- Apr- 2022].

[59] R. Hoerl and D. Kuonen, "The Data Science Management Process", MIT Sloan Management Review. [Online]. Available: https://sloanreview.mit.edu/article/the-data-science-management-process/?og=Home+Tiled. [Accessed: 02- Apr- 2022].

[60] P. Meissner and C. Keding, "The Human Factor in AI-Based Decision-Making", MIT Sloan Management Review. [Online]. Available: https://sloanreview.mit.edu/article/the-human-factor-in-ai-based-decision-making/. [Accessed: 02- Apr- 2022].

REFERENCES

[61] G. Bhaskar, P.R. Daugherty, H.J. Wilson, et al., “Taking a Systems Approach to Adopting AI,” Harvard Business Review, May 9, 2019, https://hbr.org

[62] "How Artificial Intelligence Will Impact the Accounting Industry?", Ace Cloud Hosting. [Online]. Available: https://www.acecloudhosting.com/blog/artificial-intelligence-impact-accounting/. [Accessed: 02- Apr- 2022].

[63] J. Hall, "Council Post: How Artificial Intelligence Is Transforming Digital Marketing", Forbes. [Online]. Available: https://www.forbes.com/sites/forbesagencycouncil/2019/08/21/how-artificial-intelligence-is-transforming-digital-marketing/?sh=331e50bb21e1. [Accessed: 02- Apr- 2022].

[64] "Data Science", Earth.stanford.edu. [Online]. Available: https://earth.stanford.edu/academics/data-science#gs.ojvbr9. [Accessed: 02- Apr- 2022].

[65] "Climate, Atmosphere, and Oceans", Eps.harvard.edu. [Online]. Available: https://eps.harvard.edu/pages/climate-atmosphere-and-oceans. [Accessed: 02- Apr- 2022].

[66] "Climate, Atmosphere, and Oceans", Eps.harvard.edu. [Online]. Available: https://eps.harvard.edu/pages/climate-atmosphere-and-oceans. [Accessed: 02- Apr- 2022].

[67] "Geophysics, Geodynamics and Tectonics | Department of Earth Sciences", Esc.cam.ac.uk. [Online]. Available: https://www.esc.cam.ac.uk/directory/research-themes/geophysics-geodynamics-and-tectonics. [Accessed: 02- Apr- 2022].

[68] "Department of Earth Sciences » Palaeobiology and Evolution", Earth.ox.ac.uk. [Online]. Available: https://www.earth.ox.ac.uk/research/themes/palaeobiology-and-evolution/. [Accessed: 02- Apr- 2022].

[69] "Palaeobiology and Palaeoecology | Department of Earth Sciences", Esc.cam.ac.uk. [Online]. Available: https://www.esc.cam.ac.uk/directory/research-themes/palaeobiology-and-palaeoecology . [Accessed: 02- Apr- 2022].

[70] "Research Groups", Earth.stanford.edu. [Online]. Available: https://earth.stanford.edu/research-groups#gs.ok4vsu. [Accessed: 02- Apr- 2022].

[71] "Scientists build new atlas of ocean’s oxygen-starved waters", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2021/oxygen-deficient-ocean-map-1227. [Accessed: 02- Apr- 2022].

REFERENCES

[72] "Dinosaurs may have lived in social herds as early as 193 million years ago", MIT News | Massachusetts Institute of Technology. [Online]. Available: https://news.mit.edu/2021/dinosaurs-may-have-lived-social-herds-early-1021. [Accessed: 02- Apr- 2022].[71] "Department of Earth Sciences » Climate Change Impacts on Planktonic Foraminifera Through Time", Earth.ox.ac.uk. [Online]. Available: https://www.earth.ox.ac.uk/2021/04/climate-change-impacts-on-planktonic-foraminifera-through-time/. [Accessed: 02- Apr- 2022].

[73] "Department of Earth Sciences » Climate Change Impacts on Planktonic Foraminifera Through Time", Earth.ox.ac.uk. [Online]. Available: https://www.earth.ox.ac.uk/2021/04/climate-change-impacts-on-planktonic-foraminifera-through-time/. [Accessed: 02- Apr- 2022].

[74] "Organisational Theory & Information Systems", Cambridge Judge Business School. [Online]. Available: https://www.jbs.cam.ac.uk/faculty-research/subject-groups/organisational-theory-information-systems/ . [Accessed: 02- Apr- 2022].

[75] "Mineral Sciences | Department of Earth Sciences", Esc.cam.ac.uk. [Online]. Available: https://www.esc.cam.ac.uk/directory/research-themes/mineral-sciences. [Accessed: 02- Apr- 2022].

[76] "Dense bones allowed Spinosaurus to hunt underwater", University of Cambridge. [Online]. Available: https://www.cam.ac.uk/research/news/dense-bones-allowed-spinosaurus-to-hunt-underwater. [Accessed: 02- Apr- 2022].

CHAPTER 4

CONTRIBUTION TO SDGs

INTRO

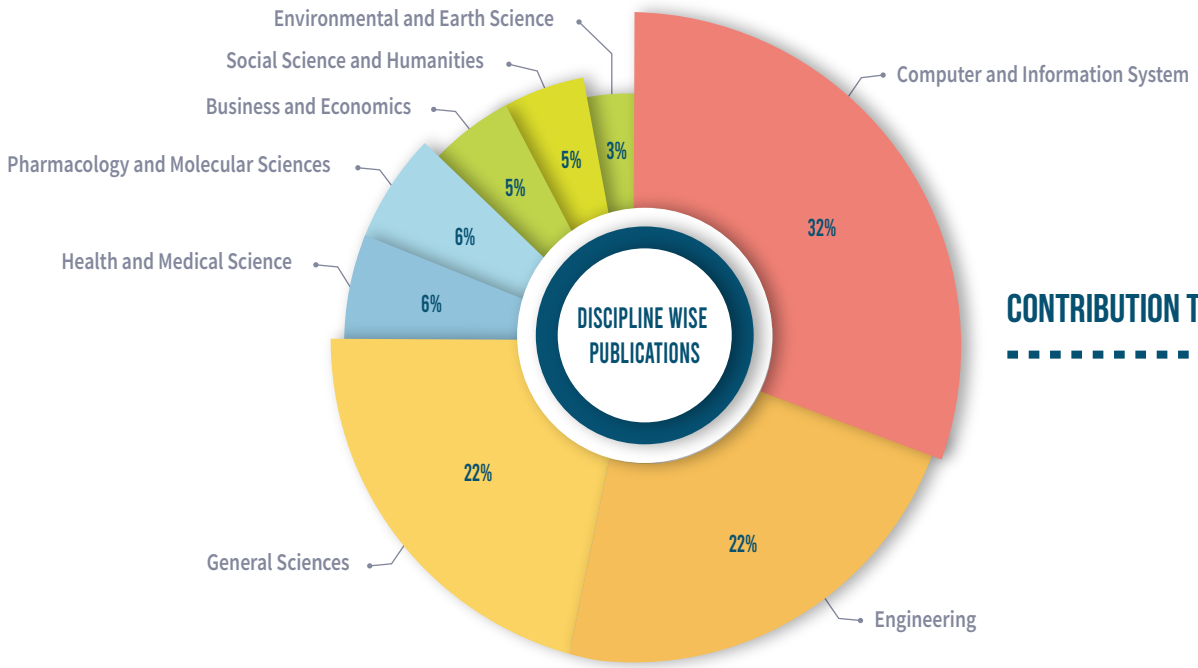
Daffodil International University undertakes a great amount of activities and conducts research which address the key aspects of United Nations Sustainable Development Goals (SDGs). The objective of this chapter is to highlight these activities and research impacts which are aligned with SDGs.

CHAPTER 4

CONTRIBUTION TO SDGs

According to the United Nations, Sustainable Development Goals (SDGs) were adopted by its member states to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. As a higher education institute, Daffodil International University is also committed to respond to this universal call for SDGs and take actions to comply with the United Nation's endeavor and to support the Government of Bangladesh for achievement of desired outcomes. In this regard DIU is working closely with the government organizations, industry, NGOs, private sector, civil society, and citizens jointly for implementation of SDGs and to make sure that we create a better and sustainable planet for our future generations.

DIU believes that universities can be the key contributors to achieving the SDGs by providing high-quality education, cutting-edge research, and ground-breaking innovation. In response to that, DIU has already made remarkable progress in research and innovation by institutionalising a strong research culture. Currently, DIU is involved in many funded (national and international) research projects which are under implementation in different departments. The key objective of these research projects is to provide students with the knowledge, skills, and scientific culture necessary to address the complex challenges of sustainable development throughout their careers. Besides, a lot of courses in different programs have been aligned with the SDGs to acquaint the students with the challenges and identify solutions to act on them professionally. At the same time, DIU reached the milestone of publishing about 1800 research articles in Scopus, mainly done by the faculty members jointly with the national and international partner universities. By 2021, 32% of the scopus indexed publications of Daffodil International University came from Computer and Information System discipline, 22% from the Engineering discipline, 22% from General Sciences discipline, and the rest from the other five major disciplines: Health and Medical Sciences (6%), Pharmacology and Molecular Sciences (6%), Business and Economics (5%), Social Sciences and Humanities (5%), Environmental and Earth Science (3%) (see the figure below). We believe those researchs have an enormous impacts on our country as well as the world.



CONTRIBUTION TO SDGs

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

A GATHERING OF FACULTY MEMBERS IN A RESEARCH AWARD CEREMONY (2022) WHERE DIRECTIONS WERE GIVEN ON CONDUCTING RESEARCH TO SOLVE ENVIRONMENTAL AND ECOLOGICAL PROBLEMS BY DR. MD SABUR KHAN, CHAIRMAN, BOT, DIU

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

DAFFODIL INTERNATIONAL UNIVERSITY SIGNED UPDATED AGREEMENT OF MAGNA CHARTA UNIVERSITATUM (MCU) 2020

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

INTERNATIONAL COLLABORATION WITH
MILLENNIUM@EDU FOR SUSTAINABLE EDUCATION

VIRTUAL YOUTH SYMPOSIUM ON MITIGATING
WASTE MANAGEMENT AND NET CARBON EMISSIONS

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

DIU AND DCCI INITIATIVE ON INDUSTRY ACADEMIA LINKAGE: THE NEW FRONTIER (SDG 9)

SEMINAR ON STAND TOGETHER AGAINST SEXUAL HARASSMENT TO REDUCE GENDER INEQUALITY

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

PARTNERSHIP WITH DCCI- LARGEST PRIVATE SECTOR REPRESENTATIVE IN BANGLADESH TO ENSURE INDUSTRY-ACADEMIA COLLABORATION

Sustainable Development Goals
HELPDESK

PARTNERSHIP WITH SDGS HELPDESK IN THE CATEGORY OF THINK TANKS AND ACADEMIA

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

ENGAGING YOUTH FOR INITIATING WORLD PEACE THROUGH PEACE DIALOGUE: DAFFODIL INTERNATIONAL MODEL UN 2020

ELIMINATION OF VIOLENCE AGAINST WOMEN

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

DAFFODIL INTERNATIONAL UNIVERSITY IS HOSTING
2019 YOUTH4SDG ASIA LEADERSHIP PROGRAM IN BANGLADESH

DIU HAS DISTRIBUTED MASKS AMONG ITS STAFF
AND COMMUNITY AS PART OF ITS COMMITMENT TO SOCIETY

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

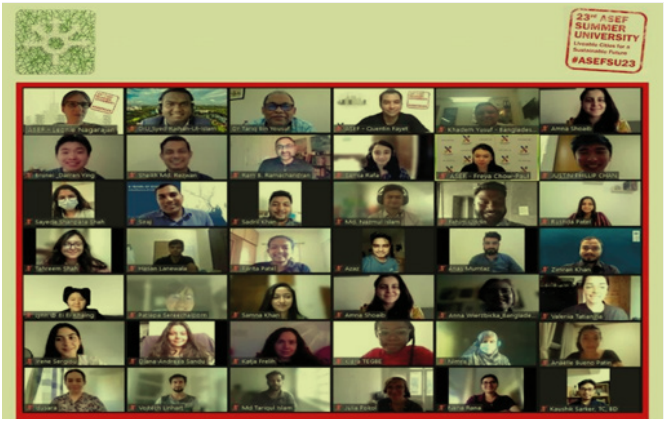
DIU HAS IMPLEMENTED RAMP FACILITY IN CAMPUS
STAIRS FOR EASY AND COMFORTABLE MOVEMENT WITH
WHEEL CHAIR FOR DISABLED AND PHYSICALLY CHALLENGED PERSONS

PERSONAL ASSISTANCE TO DISABLED PERSONS IN DIU CAMPUS

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

COLLABORATION WITH ASIA-EUROPE FOUNDATION IN ORGANIZING ASEF SUMMER UNIVERSITY 2021 ON "LIVEABLE CITIES FOR A SUSTAINABLE FUTURE" (SDG-11)



DIU CHAIRMAN DELIVERED KEYNOTE SPEECH ON SUSTAINABILITY IN HIGHER EDUCATION IN THE 'MADAYAW INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE 2021'

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

DIU REPRESENTATIVES ATTENDED AASHE CONFERENCE ON SUSTAINABILITY IN HIGHER EDUCATION

DIU REPRESENTATIVE DISCUSSED ON ITS SDGS BEST PRACTICES AT 76TH UNGA HIGH-LEVEL EVENT ON SOCIAL BUSINESS, YOUTH AND TECHNOLOGY

CHAPTER 4

SELECTED ACTIVITIES ALIGNED WITH SEVERAL SDGs

DISS MEETING WITH A TEAM FROM UNICEF AND CIVIL SOCIETY

SBSF OF DAFFODIL UNIVERSITY AND AGING SUPPORT FORUM WORKING TOGETHER FOR ENSURING EQUALITY FOR ELDERLY PEOPLE

CHAPTER 5

FUNDED RESEARCH PROJECT

INTRO

Daffodil International University is involved with so many research projects funded by both national and international funding organizations. The key objective of this chapter is to highlight some of those ongoing research projects.

CHAPTER 5

FUNDED RESEARCH PROJECT

PROJECT TITLE	PRINCIPAL INVESTIGATOR	FUNDED BY	CONTACT
1. Unmanned Aerial System-based Assessment of Tree Cover and Deforestation Dynamics in Bangladesh	Dr. ABM Kamal Pasha	International Organization	drpasha@daffodilvarsity.edu.bd
2. HARMONY Project	Dr. Md. Fokhray Hossain	International Organization	drfokhray@daffodilvarsity.edu.bd
3. Microencapsulation of Glycerrhiza glabra (Licorice) for potential antiviral activities including covid 19	Dr. Sharifa Sultana	International Organization	sharifa@daffodilvarsity.edu.bd
4. Development and standardization of process for value added beet root products commercialization	Dr. Md Bellal Hossain	Govt. Organization	drbellal@daffodilvarsity.edu.bd
5. Bangla OCR Project with Apurba Technologies	Ms. Sharmin Akter	Govt. Organization	sharminakter.cse@diu.edu.bd
6. National Girls Programming Contest	Ms. Sharmin Akter	Govt. Organization	sharminakter.cse@diu.edu.bd
7. Social stigma related to prevention and treatment of Covid-l9: A contemporary public health challenge	Dr. Md. Shahjahan	Govt. Organization	drshahjahan@daffodilvarsity.edu.bd

PROJECT TITLE	PRINCIPAL INVESTIGATOR	FUNDED BY	CONTACT
8. Qualitative and quantitative analysis of steroids and PDE-5 inhibitors as chemical adulterants in herbal products available in Bangladesh	Dr. Mohammed Shafikur	Govt. Organization	shafikur.pharmacy@diu.edu.bd
9. Scientific exploration of Hyolipilic, Antiobesity and anti-fatty liver like activity of common edible plants in Bangladesh	Dr. Mohammed Shafikur	Govt. Organization	azad.ph@diu.edu.bd
10. Assessment of anti-diabetic effect through natural plant extracts	Mr. Md. Mizanur Rahman	Govt. Organization	mizanur.ph@diu.edu.bd
11. Development and bioavailability study of insulin loaded lipid-based nano-vesicle for oral delivery using rat model	Dr. Md Mofizur Rahman	Govt. Organization	mofizur.ph@diu.edu.bd
12. Phytochemical Characterization and Biological Screening of Allium cepa L. Peel Extracts	Ms. Faria Mannan Mithi	Govt. Organization	mithi.ph@diu.edu.bd
13. Online Doctors Chamber	Dr. Imran Mahmud	Non-Govt. Organization	imranmahmud@daffodilvarsity.edu.bd
14. Video Documentary	Dr. Imran Mahmud	Non-Govt. Organization	imranmahmud@daffodilvarsity.edu.bd
15. Participatory Urban Design Consultancy	Mr.Sheikh Muhammad Rezwan	Non-Govt. Organization	headarch@daffodilvarsity.edu.bd
16. Urban Furniture making	Mr.Sheikh Muhammad Rezwan	Non-Govt. Organization	headarch@daffodilvarsity.edu.bd

PROJECT TITLE	PRINCIPAL INVESTIGATOR	FUNDED BY	CONTACT
17. Auditing Software for Luminaries	Dr.Imran Mahmud	Non-Govt. Organization	imranmahmud@daffodilvarsity.edu.bd
18. Prevalence of infertility among the urban areas of Bangladesh	Ms. Nahian Fyrose Fahim	Non-Govt. Organization	fyrose.ph@diu.edu.bd
19. Machine Learning Boot-camp [S- 3]	Mr. Md. Sanzidul Islam	DIU	sanzid.cse@diu.edu.bd
20. DIU Intra University Hackathon, 2021	Mr. Saiful Islam	DIU	hsaiful.cse@diu.edu.bd
21. Collaborative research work on Food Behavior and Mental Stress of Few Ethnic groups in Ramu Upazila, Cox's Bazar with the department of Public Health, DIU	Ms. Effat ara Jahan	DIU	effatara.nfe@diu.edu.bd
22. Evaluation of antioxidant activity, total phenol, flavonoid content of different of varieties of beetroot cultivated in Bangladesh	Mr. Harun-ur-Rashid	DIU	rashid.nfe@diu.edu.bd
23. Neuropharmacological Effect of Chassalia curviflora (Rubiaceae) Leaves in Swiss Albino Mice Model	Ms. Aklima Akter	DIU	aklima.ph@diu.edu.bd
24. Project Dakpiyon	Mr. Md Salah Uddin	DIU	salah.mct@diu.edu.bd
25. Design guidelines for daylight distribution in Practices in Wooden Houses with Contemporary and light-shelf	Arch. Sabrina Rahman	DIU	sabrina.arch@diu.edu.bd

PROJECT TITLE	PRINCIPAL INVESTIGATOR	FUNDED BY	CONTACT
26. Integrating Pedestrian Circulation with Proposed Rapid Transit Route: Design Proposal of a Skywalk for Smart Dhaka	Prof. Khairul Enam	DIU	khairulenam@diu.edu.bd
27. Sustainable Urban Form and Dynamics of Rivers in the Context of Faridpur City, Bangladesh	Mr. Asif Ibne Basit	DIU	turza.arch@diu.edu.bd

CHAPTER 6

POTENTIAL SCHOLARS AND ACHIEVEMENTS

INTRO

Daffodil International University has a large number of researchers who have made valuable contributions to their area of interests. This chapter presents potential contributors and a few achievements of DIU.

CHAPTER 6
POTENTIAL SCHOLARS

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Touhid Bhuiyan	Professor	Computer Science and Engineering	• Cyber Security • Trust Management • Health Education & Communication • Recommender System • Artificial Intelligence E-Learning	headcse@daffodilvarsity.edu.bd
Dr. Md. Ismail Jabiullah	Professor	Computer Science and Engineering	• Network Security, Web Security, Software Security, Internet Security • Image Processing, Computer Vision • Wireless Network, Cellular Network, Satellite Network • Artificial Intelligence and Neural Networks • Machine Learning • Deep Learning	drismail.cse@diu.edu.bd
Dr. Md. Fokhray Hossain	Professor	Computer Science and Engineering	• E-Commerce • E-business and Management Information System • Computer Architecture and Organization	drfokhray@daffodilvarsity.edu.bd
Dr. Sheak Rashed Haider Noori	Associate Professor	Computer Science and Engineering	• Human Computer Interaction • Gamification • IoT • Data Mining • Mobile Computing	drnoori@daffodilvarsity.edu.bd
Dr. S. M. Aminul Haque	Assistant Professor	Computer Science and Engineering	• Machine Learning • Artificial Intelligence • Data Mining • Distributed and High Performance Computing	aminul.cse@daffodilvarsity.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Mr. Md Zahid Hasan	Associate Professor	Computer Science and Engineering	• Health Informatics • Smart Agricultural System • Machine Learning • Computer Vision • Data Mining • Deep Learning • Decision Science	zahid.cse@diu.edu.bd
Ms. Nazmun Nessa Moon	Associate Professor	Computer Science and Engineering	• Data Mining • Matching Learning • IoT • Graph Algorithm • Bioinformatics • Artificial Intelligence	moon@daffodilvarsity.edu.bd
Dr. Imran Mahmud	Associate Professor	Software Engineering	• Information System • Survey based research • Management Information System • Educational Technology • HCI • Usability Engineering	imranmahmud@daffodilvarsity.edu.bd
Mr. S A M Matiur Rahman	Associate Professor	Software Engineering	• Application of Software Engineering in Artificial Intelligence • Biological Signal Processing and Analysis • Exercise and Sport Science	matiur.swe@diu.edu.bd
Mr. Md. Maruf Hassan	Associate Professor	Software Engineering	• Cyber Security • Malware Detection • Machine Learning • Image Processing	maruf.swe@diu.edu.bd
Dr. Md. Kamrul Hossain	Associate Professor	General Educational Development	• Efficiency Measurement: DEA and SFA • Impact of Climate change • Application of Statistical Distributions • Statistical Data Mining	headged@daffodilvarsity.edu.bd
Mr. Syed Mizanur Rahman	Associate Professor	General Educational Development	• Development Economics • Poverty and Health • Development Communication	raju@daffodilvarsity.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Sk. Abdul Kader Arafin	Associate Professor	General Educational Development	• Radiation and Health Physics (Environmental Health and Medical Physics)	skak_arafin@daffodilvarsity.edu.bd
Dr. Bimal Chandra Das	Associate Professor	General Educational Development	• Network data communications with traffic fluctuations • Application conic programming in network communication • Power efficient network with traffic fluctuations • Optimization	bcdas@daffodilvarsity.edu.bd
Dr. Md Kabirul Islam	Professor	Multimedia & Creative Technology	• ICT4D • Multimedia and Web Technologies in Learning • E-learning and M-learning • Machine Learning • Constructivist Design of Learning	kislam@daffodilvarsity.edu.bd
Dr. Shaikh Muhammad Allayear	Professor	Multimedia & Creative Technology	• High Performance Computing • iSCSI Protocol • Big Data • Cloud Computing • Network Storage Solutions (NAS, SAN, iSCSI) • Android Games and Musical Applications. Google Mentor • Digital Music Systems	headmct@daffodilvarsity.edu.bd
Mr. Arif Ahmed	Associate Professor	Multimedia & Creative Technology	• 3d animation • Simulation animation • Digital learning materials • Cloth simulation • 3d printer	arifahmed@daffodilvarsity.edu.bd
Dr. ABM Kamal Pasha	Associate Professor	Environmental Science and Disaster Management	• Coastal Environment and Geo-environmental Changes under different sea-level regimes	drpasha@daffodilvarsity.edu.bd
Dr. Mahfuza Parveen	Associate Professor	Environmental Science and Disaster Management	• Water Pollution • Phytoremediation • Aquatic macrophytes • Plant Physiology • Heavy Mineral separation	mahfuza.esdm@diu.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Mohammed Nadir Bin Ali	Associate Professor	Computing and Information System	• Network Security • Intrusion Prevention System • IPS mode • lIPS Algorithm	it@daffodilvarsity.edu.bd
Dr. Md. Mahbubul Haque	Professor	Textile Engineering	• Textile production methods • Fabric manufacturing in general handlooms • Textile costing • Textile economics • Sewing performance	drhaque@diu.edu.bd
Dr. Engr Md Saifur Rahman	Professor	Textile Engineering	• Polymer Chemistry • Fiber Science • Technical Textiles	drsaifur@diu.edu.bd
Mr. Abdullah Al Mamun	Associate Professor	Textile Engineering	• Quality Manual • Apparel Management	mamun@daffodilvarsity.edu.bd
Dr. M. Shamsul Alam	Professor	Electrical and Electronic Engineering	• Hybrid Renewable Energy System • Electricity Distribution system • Telecommunication Sector Reform • Electricity Distribution system Automation	deanfe@daffodilvarsity.edu.bd
Dr. Md. Shahid Ullah	Professor	Electrical and Electronic Engineering	• Power System Stability • Load Flow Study • Fuel Cell	shahid.eee@diu.edu.bd
Dr. Md. Rezwanul Ahsan	Associate Professor	Electrical and Electronic Engineering	• Analog and Digital Electronic System Design • Computational Electromagnetics • Antenna and Wireless Communications • Biomedical Signal Processing and Pattern Recognition • VLSI Design	ahsan.eee@diu.edu.bd
Mr. Md. Taslim Arefin	Associate Professor	Electronics and Telecommunication Engineering	• Ad-hoc networking • IP-TV • Wireless Communication • Digital Transmission	arefin@daffodilvarsity.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. A. K. M. Fazlul Haque	Professor	Electronics and Telecommunication Engineeringg	• Signal Processing • Wireless Communication • Telemedicine • Computer Networking	akmfhaque@daffodilvarsity.edu.bd
Dr. M. R. Kabir	Professor	Civil Engineering	• Water conservation • Sediment transport • Water resource management • Integrated water resources management	mkabir.ce@diu.edu.bd
Dr. Miah M. Hussainuzzaman	Associate Professor	Civil Engineering	• Arsenic and Iron removal technology • Manganese removal technology • Ventilation • Hydrology	drzaman.ce@diu.edu.bd
Dr. Md. Khairul Enam	Professor	Architecture	• Low income housing design • Waterways around dhaka city • Pedestrian facility design	khairulenam@diu.edu.bd
Mr. Sheikh Muhammad Rezwan	Assistant Professor	Architecture	• Green building design • Urban and Rural development • Participatory design	headarch@daffodilvarsity.edu.bd
Mr. Md. Nazmul Hoque Nayeem	Assistant Professor	Architecture	• Resilience in vernacular architecture and housing • Informal settlement • Water based settlement and community • Design	nayeem.arch@diu.edu.bd
Dr. Muniruddin Ahamed	Professor	Pharmacy	• Phytochemistry • Steroidal Chemistry • Pharmacology	drmuniruddin.ph@diu.edu.bd
Dr. Mohammed Shafikur Rahman	Associate Professor	Pharmacy	• Analysis of Protein and Peptide • Assay of Caspase activity Analytical method development • Phytochemical and Biological Analysis of Plants	shafikur.pharmacy@diu.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Sharifa Sultana	Associate Professor	Pharmacy	• Development of extended release matrix Tablet • Degradation kinetic studies of non pharmacopoeial drug • HPLC-method development and validation of non pharmacopoeial drug • Phytochemical investigation of plants.	sharifa@daffodilvarsity.edu.bd
Dr. Md. Sarowar Hossain	Associate Professor	Pharmacy	• Identification of Insulin and leptin enhancing agents in plant sources to regulate energy homeostasis in vivo. • Novel dominant screening scheme identified mutations of the Sim1 and Mc4r genes in obese pedigrees • Preparation of AAV vector to express the Sleepy gene in vivo.	sarowar.ph@diu.edu.bd
Dr. Abu Naser Zafar Ullah	Professor	Public Health	• Health impact evaluation • Tobacco addiction • Tuberculosis • Adolescent mental health • Global burden of disease	deanfahs@daffodilvarsity.edu.bd
Dr. Md. Shahjahan	Professor	Public Health	• Health impact evaluation • Tobacco addiction • Tuberculosis • Adolescent mental health • Global burden of disease	drshahjahan@daffodilvarsity.edu.bd
Dr. Salamat Khandker	Professor	Public Health	• Occupational and environmental health • Arsenic contamination of groundwater • Indoor air pollution • Climate change and health	drsalamat@daffodilvarsity.edu.bd
Dr. ABM Alauddin Chowdhury	Associate Professor	Public Health	• Public Health • Medical Anthropology • Nutrition • Sociology	dralauddin@daffodilvarsity.edu.bd
Dr. A. I. Mustafa	Professor	Nutrition and Food Engineering	• Organic & inorganic chemical process Industries • Analytical chemistry • Environmental chemistry • Polymer chemistry • Lipid chemistry	deanfahs@daffodilvarsity.edu.bd

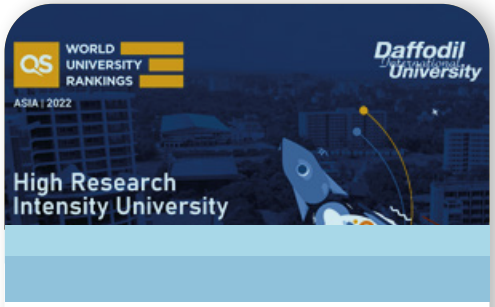
NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Md. Bellal Hossain	Professor	Nutrition and Food Engineering	• Food science • Instrument Method of Analysis • Seasonal Analytical Chemistry • Food Safety and Hygiene • Life Cycle Nutrition	drbellal@daffodilvarsity.edu.bd
Dr. Sheikh Mahatabuddin	Associate professor	Nutrition and Food Engineering	• Biophysics & Structural Biology • Ice Physics, Frozen Foods & Cryotechnology • Cancer Biology and Cancer statistics • Biophysical and Chemical Kinetics • Protein Engineering	smuddin.nfe@diu.edu.bd
Dr. Mohammed Masum Iqbal	Professor	Business Administration	• Marketing Customer Relationship Management • Human Resource Management	masum@daffodilvarsity.edu.bd
Dr. Mostafa Kamal	Professor	Business Administration	• Academic Institutions • Real Estate & Housing Finance Management • Micro Credit • Academic Curriculum & Conflict Management	m.kamal@daffodilvarsity.edu.bd
Ms. Tanzina Hossain	Associate zProfessor	Business Administration	• Finance	tanzina_diu@daffodilvarsity.edu.bd
Dr. Md. Abul Hossain	Adjunct Professor	Business Administration	• Housing Finance system in Bangladesh & Real Estate Business	hossain@daffodilvarsity.edu.bd
Dr. Md. Abdur Rouf	Associate Professor	Business Administration	• Corporate financial Reporting and Corporate Governance	rouf.bba@diu.edu.bd
Mr. Mohammad Shibli Shahriar	Associate Professor	Business Administration	• Business • Marketing • English language	shibli@daffodilvarsity.edu.bd
Mr. Nurul Mohammed Zayed	Associate Professor	Business Administration	• Finance • Economics	zayed.bba@daffodilvarsity.edu.bd
Mr. Mahbub Parvez	Associate Professor	Tourism and Hospitality Management	• Finance • Management • Mathematics	mparvez@daffodilvarsity.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Mr. Md. Golam Mostofa	Assistant professor	Tourism and Hospitality Management	• Consumer behavior in tourism & hospitality industry • Hospitality management • Tourism & hospitality marketing • Customer satisfaction and loyalty	mostofa.thm@diu.edu.bd
Ms. Khadijatul Kobra	Associate professor	Tourism and Hospitality Management	• T-Fuzzy Groups	khadija.ged@daffodilvarsity.edu.bd
Md. Kamruzzaman	Assistant Professor	Innovation & Entrepreneurship	• Financial management Investment analysis • Portfolio management • Capital investment decision	kamruzzaman.bba@diu.edu.bd
Dr. Amir Ahmed	Assistant Professor	Real Estate	• GMO • Lean Production • CSR • Nutrition	dramir.nfe@diu.edu.bd
Mr. Md. Rayhanul Islam	Assistant Professor	Real Estate	• Accounting • Taxation • Auditing	rayhanul.bba@diu.edu.bd
Dr. A. M.M. Hamidur Rahman	Professor	English	• English for Specific Purposes • Applied Linguistics • Teaching English as a Foreign Language • Intercultural Communication	hamidurrahman@diu.edu.bd
Dr. A. M.M. Hamidur Rahman	Professor	English	• English for Specific Purposes • Applied Linguistics • Teaching English as a Foreign Language • Intercultural Communication	hamidurrahman@diu.edu.bd
Dr. Ms. Liza Sharmin	Associate Professor	English	• English for Specific Purposes (ESP) • Enhancing teaching effectiveness • Critical thinking and Problem solving	headenglish@daffodilvarsity.edu.bd
Dr. Binoy Barman	Professor	English	• English language • English literature • Linguistics • ELT	drbinoy@daffodilvarsity.edu.bd

NAME	DESIGNATION	DEPARTMENT	RESEARCH INTERESTS	EMAIL
Dr. Mohammed Shamsul Hoque	Professor	English	• Inequality in ELT in Bangladesh • CLT and teacher distress in non-english speaking settings • Urban-rural divide and ELT provisions in Bangladesh • Foreign language anxiety among non-english speaking learners of english • English language • Literature	hoque.eng@daffodilvarsity.edu.bd
Ms. Tahsina Yasmin	Associate Professor	English	• Gender Roles in Latin American Dictator Novels • Alternative Assessment • Critical thinking • Technology assisted teaching-learning	tahsina.eng@daffodilvarsity.edu.bd
Dr. Kudrat-E-Khuda (Babu)	Professor	Law	• Human Rights • Intellectual Property • Environmental Law • Media Law • Business Law	kekbabu.law@diu.edu.bd
Mr. Fouad Hossain Sarker	Associate Professor	Development Studies	• Corporate Social Responsibility Micro Credit • Gender Issues • E-governance • E-learning	fouadsarker@daffodilvarsity.edu.bd
Dr. Mohamed Emran Hossain	Associate Professor	Development Studies	• landscape of remittances • E-governance • E-learning	emran@daffodilvarsity.edu.bd
Mr. Rafi Al Mahmud	Assistant Professor	Development Studies	• Corporate Social Responsibility Micro Credit • Gender Issues • E-governance • E-learning	rafi.ds@diu.edu.bd
Dr. Ujjwal K Chowdhury	Professor	Journalism, Media and Communication	• Convergent Media Education • Digital education • E-learning • Media education	+8801847334942

CHAPTER 06

ACHIEVEMENTS | DIU's POSITION IN WORLD UNIVERSITY RANKINGS



QS WORLD UNIVERSITY RANKINGS (ASIA)-2022

DIU Ranked 3rd among private universities in Bangladesh and within top 400 Asian Universities by QS World University Rankings (Asia)-2022

TIMES HIGHER EDUCATION IMPACT RANKINGS-2021

DIU Ranked 1st in Bangladesh and within top 400 Global Universities by Times Higher Education Impact Rankings-2021

UI-GREENMETRIC WORLD UNIVERSITY RANKINGS 2021

DIU Ranked as the 175th Most Sustainable University in the world by UI-GreenMetric World University Rankings 2021

RESEARCH UPDATE

Division of Research
Daffodil International University
Daffodil Smart City
Ashulia, Dhaka, Bangladesh
https: //daffodilvarsity.edu.bd