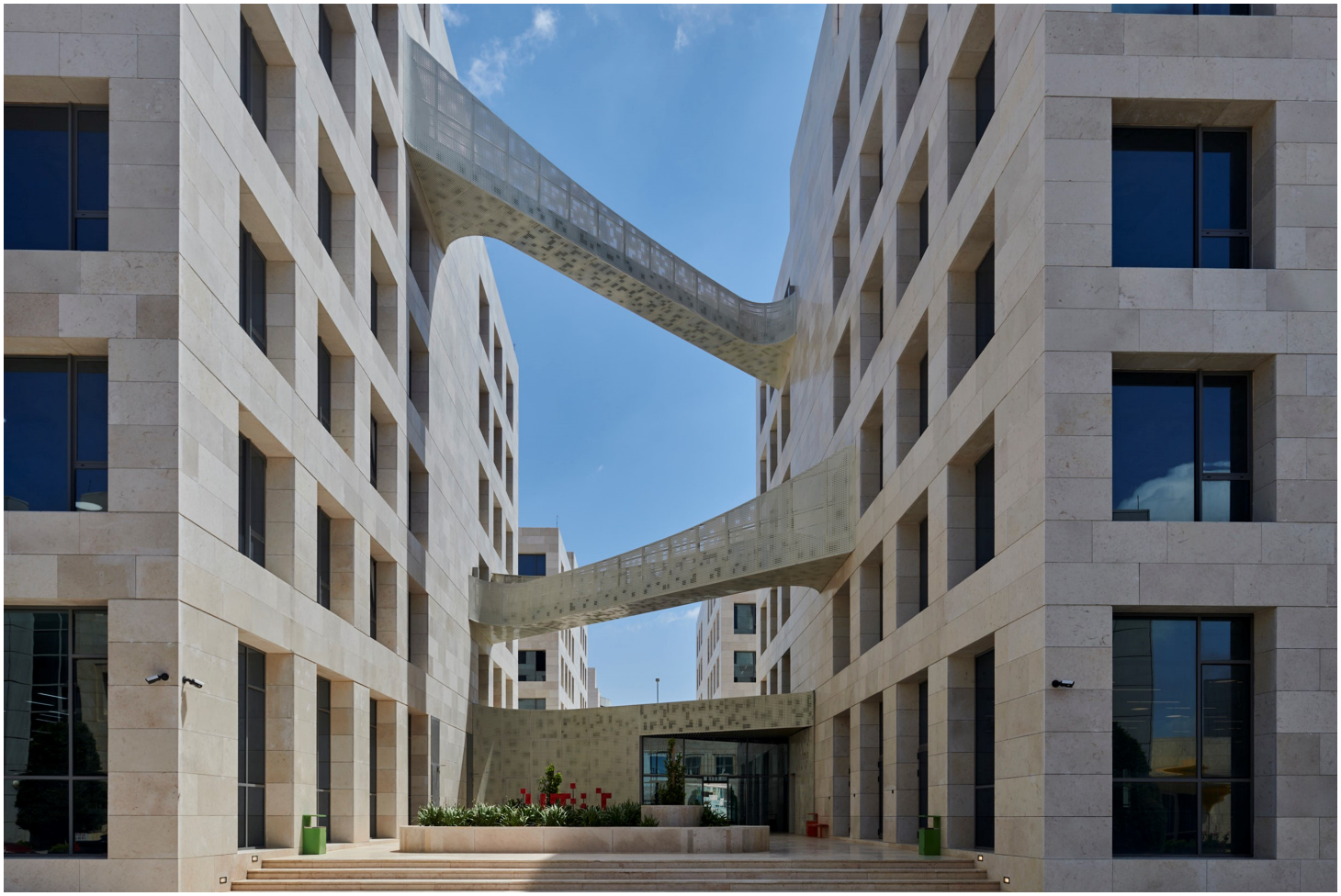
جامعة الحسين التقنية
Al Hussein Technical University

ASSIGNMENT BRIEF

HTU Course No: 40201290	**HTU Course Name:** Planning a Computing Project
BTEC Unit Code: H/618/7407	**BTEC UNIT Name:** Planning a Computing Project



Student Name/ID Number/Section	
HTU Course Number and Title	40201290 Planning a Computing Project
BTEC Unit Code and Title	H/618/7407 Planning a Computing Project
Academic Year	2024-2025 1
Assignment Author	Nayef Abu-Aqeel
Course Tutor	Fadia - Nayef Abu-Aqeel - Hana' Alrashid - Rahmeh Ibrahim
Assignment Title	AI
Assignment Ref No	1
Issue Date	03/11/2024
Formative Assessment dates	From 04/11/2024 to 10/12/2024
Submission Date	14/12/2024
IV Name & Date	Batool Alarmouti 02/11/2024

Submission Format

Report:

- Technical report
- Three Logbooks
- Declaration Form

Reports Guidelines:
Your submissions should be in the form of a soft copy via the eLearning school system. The report should be:

- Written in professional style format.
- The report must be submitted in MS Word format (not pdf).
- Include a cover page: Student name, Class, Assignment Title, and Date.
- Your work must be supported with references using the Harvard reference system.
- If the percentage of quoted sources in your report is more than 15%, you shall fail the course.
- Any plagiarism, even if it is 1%, shall result in failing the course.

Oral Exam:

An oral discussion will be scheduled with your instructors to assess your understanding of the assignment.

Resubmission:
If you lose P1 (Research part), you will NOT be eligible for resubmission.

Note:
If you do not see the Turnitin report when you submit your report, contact your instructor immediately

Unit Learning Outcomes

LO1 Conduct small-scale research, information gathering, and data collection to generate knowledge on an identified subject.

LO2 Explore the features and business requirements of organizations in an identified sector.

Assignment Brief and Guidance

Artificial intelligence is at the forefront of innovation within Computer Science that uses a combination of logic, algorithms and large data sets to produce an AI model. The AI model is created to perform specific

tasks or make predictions on supplied sets of input data, for example identifying patterns in weather data, internet search data or analysis of medical data. Artificial intelligence is predicted to generate a potential impact to the global economy of $13 – $15 Trillion by 2030, with sales of AI related hardware, software and services predicted to see a global revenue of $900 billion. It is predicted that AI will boost the GDP of China by a little over 26% by 2039, and of North America by 14.5%.

AI requires the input of structured and labelled data, where the outputs are already known. The input data sets to the AI model are intrinsically linked to study field to which the AI engine is to be applied. The AI model can then be used to identify and recognise patterns and relationships within the input data. This identification step is referred to as 'training' the AI model. Once this training is completed, the model can then be used to make predictions and identify patterns within brand new data sets. This new data set can then be added to the existing data set, so that the AI model keeps 'growing'. As the model data set keeps expanding, and the AI algorithms are modified and refined, this gives the impression that the AI is 'learning' and demonstrating 'intelligence'. AI has been used extensively to analyse and process
large and complex datasets produced by big data systems, often in real time and using Computer Vision to extract data from image sources.

Developing Artificial Intelligence required a range of knowledge and skills across a broad range of computer science disciplines. AI developers need to be familiar with the algorithms and techniques in fields such as machine learning, natural language processing, computer vision and data science. Knowing the required computing skills will help organisations recruit the correct resources to help develop and extend AI systems.

Artificial Intelligence has a range of benefits across many industry sectors. In the finance industry, AI is rapidly becoming a game changer, using advanced algorithms, models and machine learning to carry out predictive analytics on large, rapidly changing financial datasets to provide more accurate financial predictions. In the field of business operations, AI automation is helping to support and enhance labour productivity, leading to greater cost savings and increased efficiency. AI is also revolutionising the way businesses interact with their customers, by providing AI driven expert systems to help customers resolve queries as well as providing personalised recommendations based on customer choices and preferences. In the field of biomedical science, AI models help in the development of new drug treatments for a range of diseases by searching and processing large scale medical and DNA datasets.

While Artificial Intelligence has numerous benefits in the analysis and processing of large data sets to solve problems, there are some clear risks to the application technology. AI systems respond to the data fed into the model, and so if this data is not representative of the problem area under study, there is a likelihood that the output of the AI model will be biased. In addition, there are security and privacy concerns on the source and storage of the large datasets used for AI. The rise of the Deepfake image and the manipulation of the human voice is also a concern because of the spread of misinformation. The wide-ranging effects of these risks mean that they can only be dealt with by a diverse range of stakeholders, including computer scientists, law makers, governments, and industry leaders. There are also incidental risks of AI in business, for example the increasing adoption of AI based systems may increase unemployment across a range of sectors and workforce demographics.
The theme will enable students to explore some of the topics concerned with Artificial Intelligence from the standpoint of a prospective computing professional or data scientist. It will provide the opportunity for students to investigate the applications, benefits and limitations of Artificial Intelligence while exploring the responsibilities and solutions to the problems it is being used to solve.

In an imagined scenario, an organization such as a company, non-profit entity, or governmental unit wants to benefit from the advancement in the AI field. The selected organization has decided to explore different technologies and tools that can be utilized in developing an AI system. Additionally, they want to investigate the impact of such kinds of AI technologies on their operational efficiency. Therefore, in one of the company's stakeholder meetings, some stakeholders were interested in solutions that enable the organization to implement an AI system to improve its business model. The stakeholders then agreed to conduct small

research to investigate the potential of developing an AI system. As a Project Manager, your responsibility is to:

Prepare a Technical Report that provides a detailed insight into the potential of utilizing an AI system. The report should have three main parts: an introduction, a research study, and an organizational study. Your research must include:

(i) A survey (15 questions: 12-13 closed-ended questions and 2-3 questions can be open-ended) that helps you:

a. Collect information about the survey responders (role, experience, gender, etc.)

b. Determine some of the **product** requirements of the proposed AI system,

c. Determine some of the **product** features of the proposed AI system, and

d. Understand the resistance that the organization may have against the AI system.

(ii) A group of 4-10 open-ended questions for the organization's management. The purpose of those questions is to determine the organization's **project** requirements (e.g. cost/budget, time, scope, quality, risks…). If this part is done through your own research, you should provide a justification for each item.

Based on your research, you must provide the following items:

1- Descriptions of Survey and Sampling Techniques.

Describe the sampling techniques and methods that you used for your small-scale research (e.g. survey or questionnaire).

2. Analysis of Collected Data and Description of Generated Knowledge

Analyze data and information from primary (survey and Interview Questions) and secondary sources (articles, papers, ...) to generate knowledge on an identified theme using appropriate tools and techniques.

3. Assessment of Research Findings and Project Requirements

Assess and interpret the research findings (generated knowledge) to evaluate how the research theme supports the project requirements of the selected organization.

The Organizational Study must have the following items:

1. Explore the features and the operational areas of the selected organization and how they support the organization’s purpose. Examples of business functions include human resources, research and development, sales, marketing, purchasing, production and quality, finance, public relations, customer service, IT, and administration. Address at least three of these business functions.

2. Discuss the role of stakeholders (internal and external) and their impact on the success of the selected organization. Internal stakeholders include management, employees, and shareholders. External stakeholders include suppliers, customers, government agencies, and communities.

3. Analyze the challenges to the success of the organization's business, which include:

- Change management, including planned changes such as expansion, diversification, changes in legislation, and system upgrades.
- Legislation and industry standards relevant to the organization.
- Communication of the need for change to stakeholders.
- Management of stakeholders before during and after change such as training, target setting, and support.
- Method of implementation of change (project).

Learning Outcomes and Assessment Criteria			
Learning Outcome	**Pass**	**Merit**	**Distinction**
LO1 Conduct small-scale research, information gathering, and data collection to generate knowledge on an identified subject.	**P1** Demonstrate qualitative and quantitative research methods to generate relevant primary data for an identified theme. **P2** Examine secondary sources to collect relevant secondary data and information for an identified theme.	**M1** Analyse data and information from primary and secondary sources to generate knowledge on an identified theme.	**D1** Interpret findings to generate knowledge on how the research theme supports business requirements in the identified sector.
LO2 Explore the features and business requirements of organizations in an identified sector.	**P3** Discuss the features and operational areas of a business in an identified sector. **P4** Discuss the role of stakeholders and their impact on the success of a business.	**M2** Analyze the challenges to the success of a business in an identified sector.	