CSC2101 – Artificial Intelligence
Assignment Task: Weeks 3 & 4
Group Discussions – Individual Submissions

(1) Task Overview

For Weeks 3 and 4, you must complete the **Diploma in Fundamentals of Artificial Intelligence (NPTEL)** on Alison and use it to strengthen your understanding of AI foundations. Here is the course: https://alison.com/course/diploma-in-fundamentals-of-artificial-intelligence

Beyond summarizing the modules, you must **trace connections** between the Alison course content and the following areas already studied in class:

- **Data Mining** (classification, clustering, association, anomaly detection).
- **Howard Gardner's 8 Types of Intelligence** (e.g., linguistic, logical-mathematical, spatial, etc.).
- **Computational AI Philosophies** (Strong vs Weak AI, Turing Test, Chinese Room, Frame Problem, Simulation Argument, Connectionism vs Classical theories).

Your outputs must **show evidence of integration**: do not only summarize Alison modules but also **link them with prior concepts and your team project context**.

You must:

1. Complete the Alison course and obtain the certificate.
2. Post the certificate on your **LinkedIn profile**.
3. Prepare a detailed **PowerPoint slide deck** covering all course modules.
4. Record a **video presentation** explaining your slides.
5. Submit the certificate, slides, and YouTube link through the Google Form provided.

Although you are expected to **discuss course concepts in your groups**, all outputs must be completed and submitted individually.

(2) Instructions

A. Alison Certificate

1. Create your Alison account and enroll in the course:
   👉 Diploma in Fundamentals of Artificial Intelligence.
2. Complete all modules and assessments.
3. Download the official Alison Certificate.
4. Post the certificate on **LinkedIn** with a professional reflection (2–3 sentences) connecting the course to your project.
5. Capture a screenshot of the LinkedIn post.
6. Upload both the certificate PDF and LinkedIn proof during submission: https://forms.gle/Ze4vF6gN6uBYzzMx5

B. PowerPoint Slide Deck

You must prepare a slide deck covering **all course modules**. For each module, create **four slides**:

- **Slides 1–3:** Summarize the key concepts clearly, using bullet points, diagrams, or examples.
- **Slide 4:** Relate the module's concepts explicitly to your team project.

The modules to be covered are:

1. Artificial Intelligence: History, Trends, and Future – explain AI's origins, milestones, current trends, and future predictions. *Application: locate your project in this trajectory (e.g., AI for Ugandan agriculture or healthcare).*

- **Data Mining:** Show how historical shifts (symbolic → statistical → deep learning) mirror the evolution of data mining from rule-based systems to predictive models.
- **Types of Intelligence:** Link to **logical-mathematical intelligence** (reasoning across milestones) and **linguistic intelligence** (AI's rise in NLP).
- **Philosophy:** Reflect on Strong vs Weak AI debates in shaping the "future of AI" narrative.
- **Project Example:** "In our agricultural disease detection project, we situate our solution within the trend of moving from expert systems to ML-based detection."

2. Introduction to Problem Solving in AI – define problems in terms of states, operators, and goals. *Application: frame your dataset and objectives as problem states.*

- **Data Mining:** Show how classification problems can be reframed as state-space search (e.g., classifying patient symptoms).
- **Types of Intelligence:** Connect to **logical-mathematical intelligence** (structuring problems formally).
- **Philosophy:** Raise the **Frame Problem** — can AI know which aspects of a problem state are relevant?
- **Project Example:** "In our chatbot, defining a problem as 'initial state = symptoms' and 'goal state = likely diagnosis' makes reasoning transparent."

3. Problem Solving by Search – present uninformed and informed search methods (DFS, BFS, A*, heuristics). *Application: link to diagnosis, resource allocation, or optimization in your project.*

- **Data Mining:** Highlight how clustering can reduce search complexity by grouping states.
- **Types of Intelligence:** Connect to **spatial intelligence** (navigating search trees).
- **Philosophy:** Relate to **simulation argument** — is the search tree itself a "simulation" of possibilities?
- **Project Example:** "Our maternal health assistant uses heuristic search to prioritize safer treatment options more quickly."

4. Knowledge Representation and Reasoning (Overview + FOL) – *explain symbolic representations and FOL rules. Application: show how your project encodes rules or relationships.*

- **Data Mining:** Association rules → transformed into FOL expressions.
- **Types of Intelligence:** Connect to **linguistic intelligence** (expressing rules) and **intrapersonal intelligence** (self-reflective rules).
- **Philosophy:** Consider **limits of formalization** — can all knowledge be captured symbolically?
- **Project Example:** "Our smart irrigation project encodes knowledge such as: 'IF soil moisture < 30% AND rainfall probability < 20%, THEN irrigate.'"

5. Inference in First Order Logic – describe deduction, soundness, and completeness. *Application: link inference to decision-making in your dataset.*

- **Data Mining:** Use classification outputs as facts and infer new labels.
- **Types of Intelligence:** Relates to **logical-mathematical intelligence** (deriving truths).
- **Philosophy:** Turing Test vs Chinese Room — is inference real "understanding" or symbol shuffling?
- **Project Example:** "In healthcare, if symptoms A and B imply disease X, inference rules help derive diagnoses."

6. Reasoning Under Uncertainty – cover Bayesian reasoning and probabilistic models. *Application: explain how your project handles incomplete or noisy data.*

- **Data Mining:** Probabilistic classification (Naïve Bayes, Bayesian Networks).
- **Types of Intelligence:** Connect to **naturalistic intelligence** (handling incomplete natural signals).
- **Philosophy:** Touch on **limits of formalization** — can uncertainty ever be fully represented?
- **Project Example:** "Our diagnostic tool uses Bayesian reasoning to handle overlapping symptoms."

7. Planning – explain goal-directed action sequencing. *Application: show how your system uses plans to achieve outcomes.*

- **Data Mining:** Data-driven planning — using frequent sequences to guide action plans.
- **Types of Intelligence:** Relates to **bodily-kinesthetic intelligence** (sequencing actions).
- **Philosophy:** Relates to the **Frame Problem** (choosing relevant preconditions for actions).
- **Project Example:** "In logistics, planning delivery routes using AI saves fuel and time."

8. Planning and Decision Making – link planning with utility and risk assessment. *Application: highlight how your project makes optimal choices under constraints.*

- **Data Mining:** Integrating association and prediction into decision-making frameworks.
- **Types of Intelligence: Interpersonal and intrapersonal intelligence** — balancing decisions with social and personal goals.
- **Philosophy:** Links to **simulation argument** — is AI's decision-making "real" or simulated rationality?
- **Project Example:** "Our digital wallet project weighs trade-offs between savings and spending for users."

9. Machine Learning – present supervised vs. unsupervised learning. *Application: connect to how your dataset is used for training models.*

- **Data Mining:** Connect supervised learning (classification, regression) and unsupervised learning (clustering).
- **Types of Intelligence: Logical-mathematical** (pattern recognition), **naturalistic** (environmental signal analysis).
- **Philosophy:** Superhuman intelligence debate — can ML surpass human abilities in its domain?

- **Project Example:** "Our sign language recognition system uses supervised learning on gesture datasets."

C. Video Presentation : https://forms.gle/Ze4vF6gN6uBYzzMx5
1. Record a video presentation (maximum **20 minutes**).
2. Your **face must be visible** throughout.
3. Present all modules, summarizing concepts (Slides 1–3) and linking them to your project (Slide 4).
4. Explicitly show how your prior knowledge (Data Mining, Intelligence Types, Philosophical AI debates) connects with the Alison course modules.
5. Upload your video to YouTube (public or unlisted) and submit the link.

(3) **Submission Instructions :** https://forms.gle/Ze4vF6gN6uBYzzMx5
Submit your work using the Google Form link provided. You must upload:
- The **Alison Certificate PDF** and LinkedIn post screenshot.
- The complete **PowerPoint Slide Deck**.
- The **YouTube Video Link**.

Deadlines:
- **Day Class:** 10th September, 11:59 PM.
- **Evening Class:** 8th September, 11:00 AM.

No submission will be accepted after these deadlines.

(4) **Assessment**

Criterion	Weight	Indicators of Excellent Work
Certificate Completion	20%	Certificate obtained, LinkedIn post uploaded with professional reflection connected to project.
PowerPoint Slides	30%	All modules covered; slides clear, accurate, visually structured; summaries + integration of prior knowledge + project links.
Application to Project	20%	Strong, original, and contextualized links between modules, past concepts, and project.
Video Presentation	20%	Clear explanations, confident delivery, professional tone, ≤20 mins, face visible; prior knowledge connections highlighted.
Originality & Integrity	10%	Work is individual, critical, and reflective. No plagiarism. **AI-generated content results in severe penalties.**

(5) **Academic Integrity**
You must complete this assignment with integrity. You may discuss concepts with your peers, but your certificate, slides, and video must be your **own individual work**. Use AI tools only as study aids; you must never copy AI-generated text into your slides, certificate reflection, or video script. **AI-generated content will attract severe penalties, including possible assignment failure.**

(6) **Course Access and Submission**
Course: https://alison.com/course/diploma-in-fundamentals-of-artificial-intelligence
Submission Form: https://forms.gle/Ze4vF6gN6uBYzzMx5