## ### Assignment 2: AI in Practice - Case Studies

\*\*Rationale:\*\*

This assignment provides students with concrete examples of how AI is used in different disciplines, helping them to understand its practical applications and limitations.

\*\*Objectives:\*\*

- Analyze real-world case studies of AI applications in various fields.

- Critically evaluate the effectiveness and ethical implications of AI solutions.

- Develop skills in identifying appropriate AI tools for specific problems.

\*\*Activities:\*\*

1. \*\*Case Study Analysis:\*\*

- Students will be divided into small groups and assigned different case studies relevant to their disciplines (e.g., AI in healthcare, finance, education).

- \*\*Assessment:\*\* Each group will present their case study analysis to the class, focusing on the AI application, its benefits, limitations, and ethical considerations.

2. \*\*Group Discussion and Peer Feedback:\*\*

- Groups will engage in a peer feedback session where they critique each other's presentations.

- \*\*Assessment:\*\* Participation and the quality of feedback will be assessed.

3. \*\*Individual Report:\*\*

- Each student will write a report on a case study of their choice, providing a deeper analysis and personal reflection.

- \*\*Assessment:\*\* Reports will be evaluated based on depth of analysis, critical thinking, and ethical considerations.

# ## Handout: Progressive Assignments on Generative AI

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\*\*Objectives:\*\*

- Analyze real-world case studies of AI applications.

- Evaluate the effectiveness and ethical implications of AI solutions.

- Identify appropriate AI tools for specific problems.

\*\*Activities:\*\*

1. \*\*Case Study Analysis:\*\*

- Analyze assigned case studies in groups.

- \*\*Assessment:\*\* Present the analysis to the class.

2. \*\*Group Discussion and Peer Feedback:\*\*

- Engage in peer feedback on presentations.

- \*\*Assessment:\*\* Participation and quality of feedback.

3. \*\*Individual Report:\*\*

- Write a detailed report on a case study.

- \*\*Assessment:\*\* Evaluated on analysis, critical thinking, and ethical considerations.

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# #**# Models & Examples**

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- Evaluate the effectiveness and ethical implications of AI solutions.

- Identify appropriate AI tools for specific problems.

\*\*Activities and Steps:\*\*

1. \*\*Case Study Analysis:\*\*

- \*\*Steps:\*\*

1. Form groups and select a case study relevant to your discipline.

2. Research the case study, focusing on the AI application, benefits, limitations, and ethical considerations.

3. Create a presentation summarizing your findings.

- \*\*Assessment:\*\* Each group will present their analysis to the class.

- \*\*Example Case Study Analysis:\*\*

"Our case study examines AI in healthcare, specifically AI-driven diagnostic tools. Benefits include increased diagnostic accuracy and efficiency. Limitations involve potential biases in training data and the need for extensive data privacy measures. Ethically, it's vital to ensure AI decisions are transparent and patient data is securely handled."

2. \*\*Group Discussion and Peer Feedback:\*\*

- \*\*Steps:\*\*

1. Present your case study analysis to the class.

2. Provide and receive feedback from peers, focusing on the clarity, depth, and ethical considerations of the presentations.

- \*\*Assessment:\*\* Participation and the quality of feedback will be assessed.

- \*\*Example Feedback:\*\*

"Your presentation on AI in finance was thorough. I appreciated the detailed analysis of risk assessment tools. One suggestion is to delve deeper into the ethical implications of AI-driven financial decisions, particularly regarding potential biases."

3. \*\*Individual Report:\*\*

- \*\*Steps:\*\*

1. Choose a case study of interest.

2. Conduct in-depth research, examining the AI application, its impact, and ethical concerns.

3. Write a detailed report, including personal reflections.

- \*\*Assessment:\*\* Reports will be evaluated based on depth of analysis, critical thinking, and ethical considerations.

- \*\*Example Report Excerpt:\*\*

"AI in autonomous vehicles presents significant advancements in transportation. Enhanced safety and efficiency are key benefits. However, ethical issues like decision-making in critical situations and data privacy must be addressed. Ensuring robust ethical guidelines and transparency in AI algorithms is essential."

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# **## Readings, Cases, Problems**

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\*\*Objectives:\*\*

- Analyze real-world case studies of AI applications.

- Evaluate the effectiveness and ethical implications of AI solutions.

- Identify appropriate AI tools for specific problems.

\*\*Activities and Steps:\*\*

1. \*\*Case Study Analysis:\*\*

- \*\*Steps:\*\*

1. \*\*Suggested Case Studies:\*\*

- "AI in Healthcare: IBM Watson's Oncology Diagnosis" (available on IBM's website and various academic articles)

- "AI in Finance: Robo-Advisors" (e.g., Betterment, Wealthfront; look for related articles and case studies)

- "AI in Education: Intelligent Tutoring Systems" (refer to articles on platforms like Khan Academy using AI)

2. Research the case study, focusing on the AI application, benefits, limitations, and ethical considerations.

3. Create a presentation summarizing your findings.

- \*\*Assessment:\*\* Each group will present their analysis to the class.

- \*\*Example Case Study Analysis:\*\*

"Our case study examines AI in healthcare, specifically AI-driven diagnostic tools. Benefits include increased diagnostic accuracy and efficiency. Limitations involve potential biases in training data and the need for extensive data privacy measures. Ethically, it's vital to ensure AI decisions are transparent and patient data is securely handled."

2. \*\*Group Discussion and Peer Feedback:\*\*

- \*\*Steps:\*\*

1. Present your case study analysis to the class.

2. Provide and receive feedback from peers, focusing on the clarity, depth, and ethical considerations of the presentations.

- \*\*Assessment:\*\* Participation and the quality of feedback will be assessed.

- \*\*Example Feedback:\*\*

"Your presentation on AI in finance was thorough. I appreciated the detailed analysis of risk assessment tools. One suggestion is to delve deeper into the ethical implications of AI-driven financial decisions, particularly regarding potential biases."

3. \*\*Individual Report:\*\*

- \*\*Steps:\*\*

1. Choose a case study of interest.

2. Conduct in-depth research, examining the AI application, its impact, and ethical concerns.

3. Write a detailed report, including personal reflections.

- \*\*Assessment:\*\* Reports will be evaluated based on depth of analysis, critical thinking, and ethical considerations.

- \*\*Example Report Excerpt:\*\*

"AI in autonomous vehicles presents significant advancements in transportation. Enhanced safety and efficiency are key benefits. However, ethical issues like decision-making in critical situations and data privacy must be addressed. Ensuring robust ethical guidelines and transparency in AI algorithms is essential."

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# **## Deeper Models**

## ### Assignment 2: AI in Practice - Case Studies

\*\*Individual Report Example:\*\*

Title: \*\*AI in Healthcare: Enhancing Diagnostic Accuracy and Efficiency\*\*

\*\*Introduction:\*\*

Artificial Intelligence (AI) has the potential to revolutionize healthcare by improving diagnostic accuracy and efficiency. This report examines the application of AI in healthcare, focusing on IBM Watson's Oncology Diagnosis system, which exemplifies the integration of AI in medical diagnostics.

\*\*AI in Healthcare:\*\*

IBM Watson's Oncology Diagnosis leverages natural language processing and machine learning to analyze vast amounts of medical literature and patient data, providing oncologists with evidence-based treatment recommendations. This AI system enhances the diagnostic process by quickly processing and correlating information that would be time-consuming for humans to analyze manually.

\*\*Benefits:\*\*

The primary benefit of AI in healthcare is its ability to improve diagnostic accuracy. By analyzing diverse data sources, AI can identify patterns and correlations that might be overlooked by human practitioners. This leads to more precise diagnoses and personalized treatment plans, ultimately improving patient outcomes. Additionally, AI systems can process information rapidly, reducing the time required to diagnose and treat patients.

\*\*Limitations:\*\*

Despite its advantages, AI in healthcare faces several limitations. One significant challenge is the quality and variability of input data. Incomplete or biased data can lead to incorrect or suboptimal recommendations. Moreover, AI systems require extensive training on high-quality datasets, which may not always be available. Another limitation is the need for interpretability; medical professionals must understand and trust AI recommendations, which requires transparent and explainable AI models.

\*\*Ethical Considerations:\*\*

Ethical concerns are paramount when implementing AI in healthcare. Data privacy is a critical issue, as AI systems require access to sensitive patient information. Ensuring robust data protection measures is essential to maintain patient trust and confidentiality. Additionally, addressing biases in AI models is crucial to prevent discriminatory outcomes. This involves continuously monitoring and updating AI systems to ensure fairness and accuracy.

\*\*Conclusion:\*\*

AI has the potential to significantly enhance healthcare by improving diagnostic accuracy and efficiency. IBM Watson's Oncology Diagnosis demonstrates how AI can support medical professionals in making evidence-based decisions. However, addressing data quality, interpretability, and ethical concerns is vital to fully realize the benefits of AI in healthcare. By doing so, we can ensure that AI systems contribute positively to patient care and outcomes.

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