



Success Through AI Mastery
STUDENT GUIDE

LESSON 4

Natural Language Processing (NLP)



JA
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Natural Language Processing (NLP)

OVERVIEW

In this lesson, you will explore how computers listen, read, and understand human language. You will look at the challenges of NLP, such as understanding slang and sarcasm, and how technologies like sentiment analysis work.



KNOWLEDGE CHECK

Instructions: Place a check mark (✓) next to the correct answer or write your answer in the space provided.

1. You're texting a friend about a new movie, and you write, "That movie was sick!" An AI analyzing this text needs to figure out if you mean the movie was amazing or if it was literally about an illness. Which specific NLP challenge does this sentence demonstrate?

- ☐ a) Anaphoric Ambiguity
- ☐ b) Semantic Ambiguity
- ☐ c) Colloquialisms and Slang
- ☐ d) Syntactic Ambiguity

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2. A company wants to analyze thousands of customer reviews to quickly understand if people are generally happy or unhappy with their new product. They don't need a detailed summary, just the overall positive or negative feeling. Which NLP application is most useful?

- ☐ a) Text Summarization
- ☐ b) Sentiment Analysis
- ☐ c) Named Entity Recognition (NER)
- ☐ d) Machine Translation

3. Match the NLP data preparation step to its correct description.

- **Text Cleaning** matches with: _____
- **Tokenization** matches with: _____
- **Stemming** matches with: _____

A. Breaking a sentence down into individual words or "tokens."

B. Reducing words to their root form, which may not be a real word (e.g., "running" -> "run").

C. Removing punctuation, special characters, and common words like "and" or "the."

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ACTIVITY: DESIGN A PERSONALITY AND DIALOGUE

Design your AI Companion: Step 4

Let's give your AI companion a voice.

1. Define its Personality:

What is your AI companion's name and personality? Is it formal and professional, a witty friend, or a calm and supportive guide?

2. Write a Dialogue:

Imagine you send your AI a sarcastic message: "Great, another math test to study for. Just what I wanted." How would its personality influence its response? Write a short line of dialogue for how it would reply.

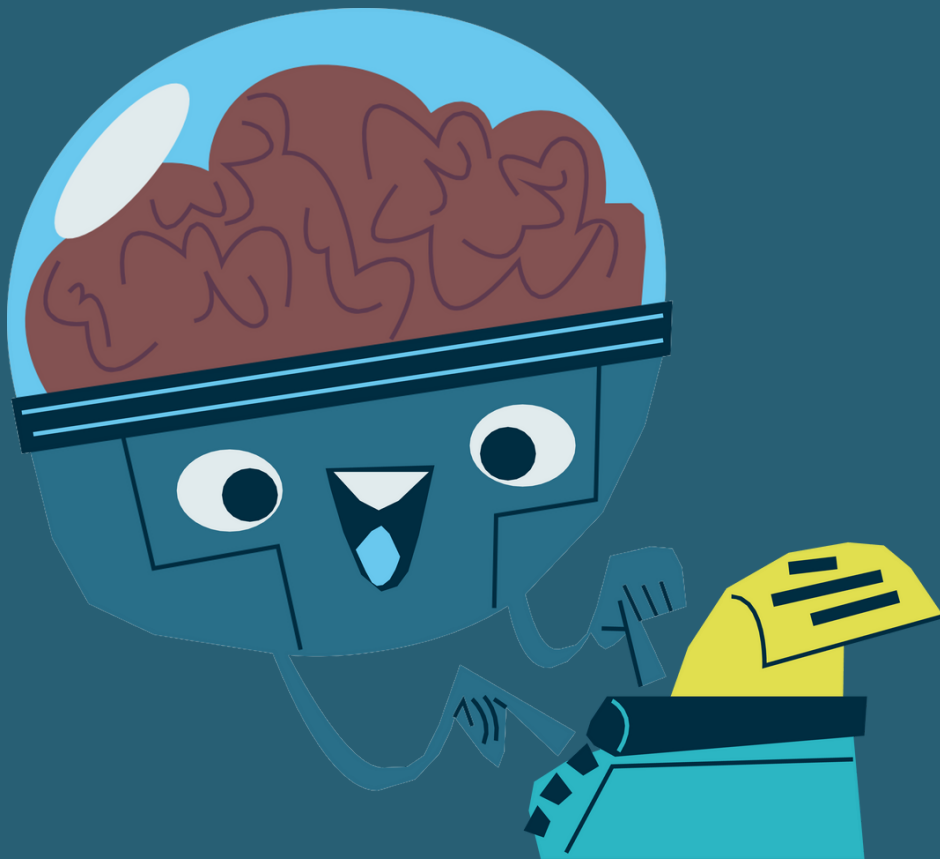
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LESSON 4 ANSWER KEY

1. c
2. b
3. Text Cleaning: C, Tokenization: A, Stemming: B



Natural Language Processing (NLP)



GLOSSARY

Natural Language Processing (NLP): A field of AI focused on enabling computers to understand, interpret, and generate human language, in both text and speech.

Artificial Intelligence (AI): The field of computer science focused on creating systems that can perform tasks that typically require human intelligence, such as learning, reasoning, and problem-solving.

Ambiguity (in NLP): A challenge for AI where a word, phrase, or sentence can have multiple possible meanings, requiring the AI to use context to determine the correct one.

Tokenization: A key step in NLP where a sentence or document is broken down into smaller units, such as individual words or "tokens," so a computer can analyze it.

Sentiment Analysis: An NLP application used to determine the emotional tone (positive, negative, or neutral) within a piece of text.