



National University of Computer and Emerging Sciences, Karachi

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AI2002 – Introduction to AI

Project Proposal

Word Hunt Puzzle Game

Section 6H

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1. Introduction

The goal of this project is to develop an interactive Word Hunt game where the grid is generated using Natural Language Processing (NLP) techniques. Instead of having predefined words placed in the grid, the system will use NLP to generate a grid filled with valid words, ensuring they can be found by the player based on a set of clues. The player will then search for these words hidden in the grid.

Heuristic and Rules:

- Objective: The player needs to find valid words hidden within a grid of random letters that are generated using NLP techniques.
- Gameplay: The grid will contain words that are generated based on a predefined list and clues. The player will input their guesses, and the system will check if they match the hidden words in the grid.
- Word Generation: The system will use NLP methods to ensure that the grid is filled with valid words.
- Clues: The player will receive clues based on the words generated in the grid. The words will have one-to-one mappings with the clues, and the player must identify these words.
- Validation: The system will provide feedback to the player, letting them know if the word they entered is correct or not.

Constraints:

- The initial grid size will be 5x5, with the possibility to increase the grid size as the player progresses.
- Words will be randomly selected from a predefined word list (e.g., common nouns, verbs) and placed within the grid using NLP techniques.
- The system will ensure that all the words placed are valid according to the selected word list.

2. Implementation Strategy

The system will generate the grid by selecting words from a dictionary and ensuring they are placed in valid locations based on rules of word placement (horizontal, vertical, or diagonal). It will also handle word intersections where words overlap correctly.

The NLP component will be used to:

1. Generate valid words from a predefined list or dictionary, ensuring they are appropriate for the puzzle.

2. Place the words in the grid in such a way that the words do not conflict with each other and follow valid crossword-style placement rules.
3. Provide clues for each word in the grid, which will be related to the meaning or usage of the word.

The game will present the player with a 5x5 grid, and the player will be tasked with finding the words listed in the clues. The grid will contain valid words that intersect at common letters, following traditional word hunt puzzle rules.

The NLP techniques used will:

- Generate the grid: Select words from a predefined list and place them in the grid.
- Handle word intersections: Ensure that words overlap correctly within the grid.
- Provide clues: Give meaningful clues for the words based on their definitions or context.

When the player guesses a word correctly, it will be highlighted, and once all the words are found, the system will congratulate the player.

3. Deliverables

Goal State:

- The game should be fully functional, with the grid automatically generated using NLP techniques, valid words placed in the grid, and the player able to search for words based on the clues provided.
- When the player finds all the words, the system will show a "Congratulations" message, increase player's points and display the total time taken.

Points:

- Points will be awarded for each correctly found word.
- Additional bonus points will be given for completing the puzzle in less time or without errors.

States:

- Initial State: The player is presented with a new grid and a set of clues.
- In-Progress State: The player enters their guesses, and the system provides feedback for each guess.
- Completion State: When all the words are found, the system congratulates the player and shows the total score and time.