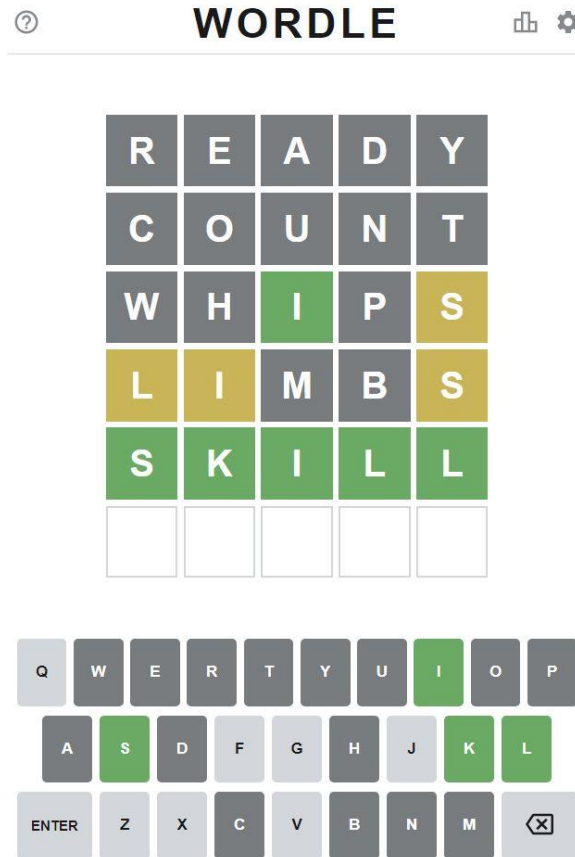




Wordle Solver Using AI

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What is Wordle?



Rules of Wordle

A 5 letter word from english dictionary is chosen at random.

Player must guess the word in less than 6 attempts.

In each attempt, the player gets to know if the letter that he entered is part of answer or not.

If a letter turns yellow/orange means that, the letter exists in the answer word but at different positions.

If a letter turns green then the letter is in the answer at the same location.

Grey/Black letter means that the letter is not part of the answer

[Play Wordle Online](#)

Initial Search Space

- All the words in the word bank as nodes, connected to one another.
- Based on the heuristic score, we make the next guess and move to that node.
- Pruned nodes will be reject nodes
- Goal state will be the secret word.

Pruning Strategy

- If a letter turns yellow/orange means that, the letter exists in the answer word but at different positions.
 - We remove all the words with that letter at that position.
 - Only consider words which contains that letter.
- If a letter turns green then the letter is in the answer at the same location.
 - Remove all the words which don't contain that letter in that position.
- Grey/Black letter means that the letter is not part of the answer
 - Remove all the words that contain that letter

Heuristic Score

- How to guess the most impactful words?
- Score each word based on letter positioning probability.

$$S(w) = \sum_{p=1}^5 \frac{\sum_{i=1}^n [W_p^i = w_p]}{n}$$

S = Word Score, w = Current Word, W = Current Word Bank, n = Number of Words in the Current Word Bank, p = Current Letter

Position in Word

- Using the letter positioning probability we are **(1)** making our best attempt to find green & yellow letters to allow further shrinking of search space and **(2)** increase the probability of guessing the correct word.

Adding Bias to Vowels

- We need to exploit the property that every word has a vowel in it.
- If a vowel is not in known letters, we need to encourage finding vowels.

$$b(w) = \sum_{p=1}^6 \frac{[V_p \exists w]}{5}$$

b = Vowel Bias, w = Current Word, V = Vowel Bank

Demo

Thank You