

# Grammar & Spell Checker:

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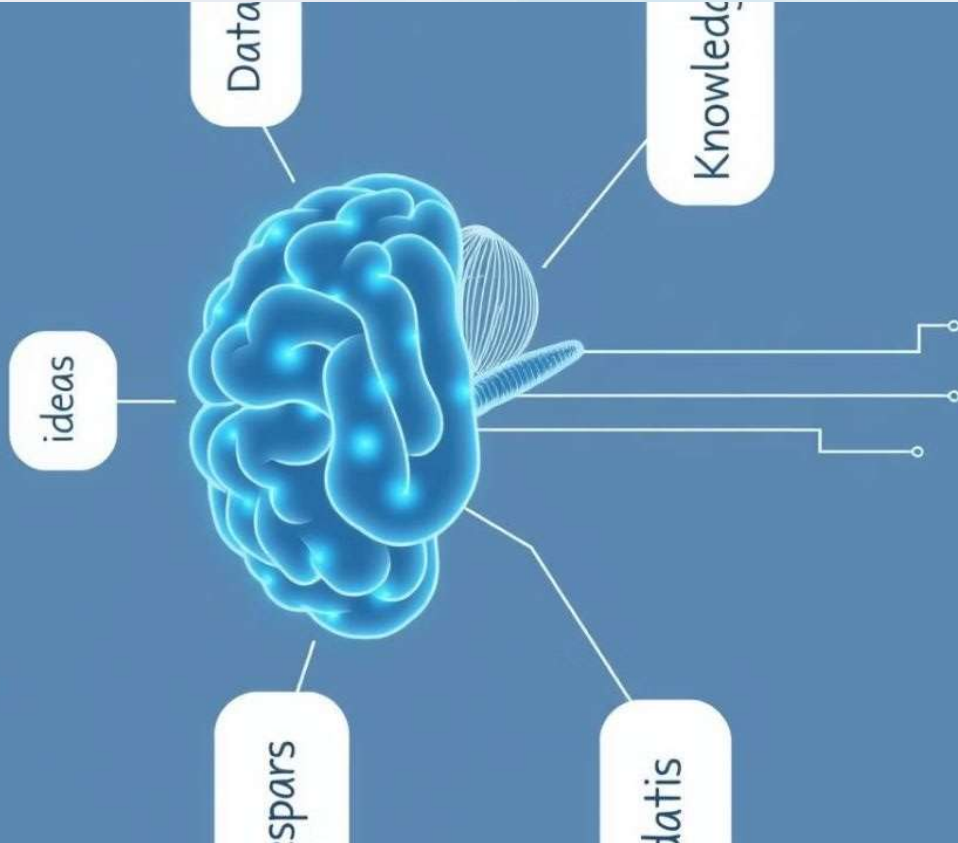
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# Introduction to Natural Language Processing (NLP)

1

## Understanding Language

NLP focuses on enabling computers to understand, interpret, and generate human language.

2

## Processing Text Data

NLP techniques are used to analyze, extract meaning, and manipulate text data.

3

## Applications

NLP has wide-ranging applications including machine translation, sentiment analysis, and chatbot development.

# The Importance of Grammar and Spell Checking

## Clear Communication

Correct grammar and spelling enhance the clarity and professionalism of written communication.

## Reader Comprehension

Errors can hinder reader comprehension and lead to misinterpretations.

## Credibility

Writing free of errors conveys a sense of professionalism and credibility.



Budget;  
Gugine ←  
Team ←

- Imiouatiey  
- Acicabuphing  
- Reelovets

# Defining the Project Scope and Goal

## Project Goal

Develop a grammar and spell checker that can identify and suggest corrections for errors in text input.

## Problem Statement

The project addresses the need for efficient and accurate automated grammar and spell checking for various text formats.

1

2

3

## Project Scope

Focus on common grammatical errors and misspellings, utilizing rule-based and statistical approaches.

# Collecting and Preprocessing the Data

## Data Collection

Gather a diverse corpus of text data from various sources to train and evaluate the model.

1. News articles
2. Books
3. Social media posts

## Data Preprocessing

Clean and prepare the collected data for use in the NLP model.

- Tokenization
- Stemming
- Lemmatization

# Implementing the Grammar Checker Algorithm

1

## Part-of-Speech Tagging

Identify the grammatical category of each word in the input text.

2

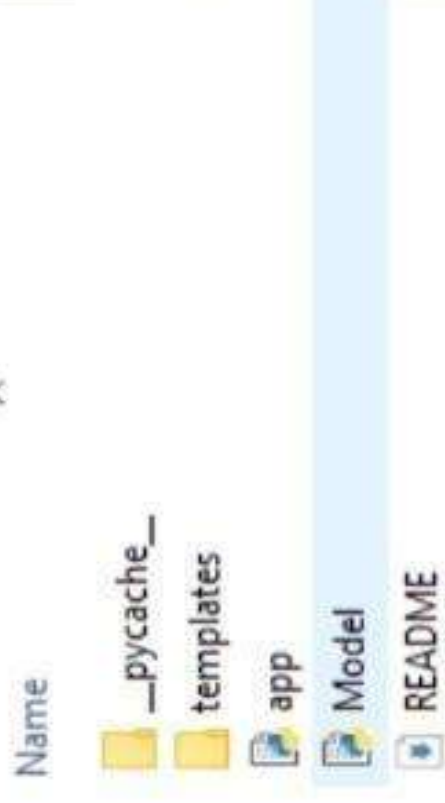
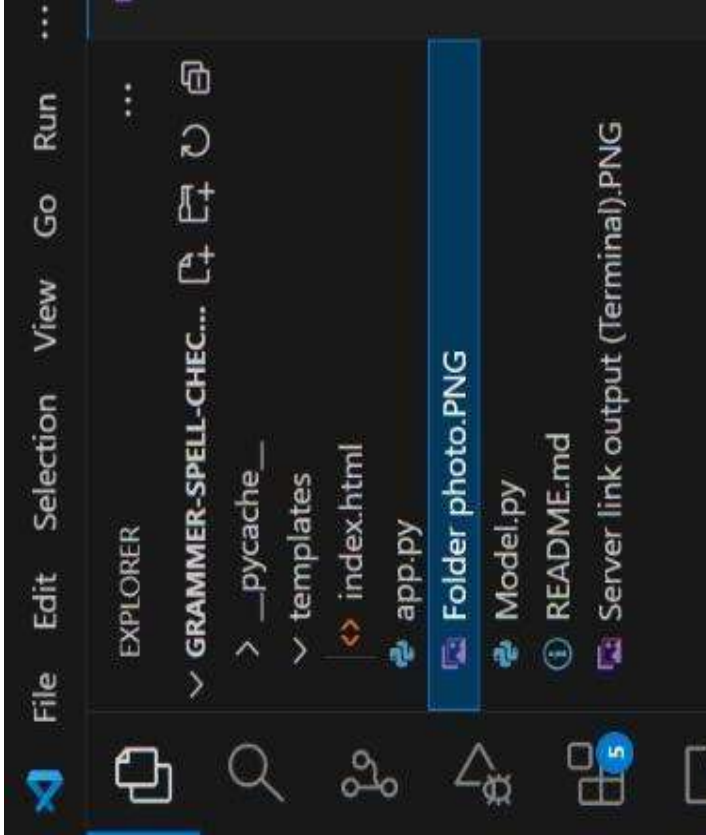
## Dependency Parsing

Analyze the grammatical relationships between words in the sentence.

3

## Rule-Based Checking

Apply predefined grammar rules to identify errors in sentence structure, punctuation, and verb conjugation.





[Github Link](#)

[Report Link](#)

```
Model.py X
Model.py > ...
1 from textblob import TextBlob
2 from language_tool_python import LanguageTool
3
4 class SpellCheckerModule:
5     def __init__(self):
6         self.spell_check = TextBlob("")
7         self.grammar_check = LanguageTool('en-US')
8
9     def correct_spell(self, text):
10         # Hello, World, subscribe, to my channel
11         words = text.split()
```

```
index.html X
templates > index.html > html > head > meta
1 <!doctype html>
2 <html lang="en">
3 <head>
4 <meta charset="utf-8">
5 <meta name="viewport" content="width=device-width, initial-scale=1">
6 <title>Grammar and spell check app</title>
7 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet"
8 </head>
9
10 <style>
11 body {
12     padding: 20px;
13     background: black;
14     color: white
15 }
16
17 .container {
18     margin-top: 10px;
19     max-width: 600px;
20 }
21
22 h1 {
23     text-align: center;
24     margin-bottom: 30px;
25 }
26
27 textarea {
28     width: 100%;
29     height: 200px;
30     resize: none;
31 }
32
```

```
app.py X
app.py > index
1 from flask import Flask, request, render_template
2 from Model import SpellCheckerModule
3
4 app = Flask(__name__)
5 spell_checker_module = SpellCheckerModule()
6
7 # routes
8 @app.route('/')
9 def index():
10     return render_template('index.html')
11
12 @app.route('/spell', methods=['POST', 'GET'])
13 def spell():
14     if request.method == 'POST':
15         text = request.form['text']
16         corrected_text = spell_checker_module.correct_spell(text)
17         corrected_grammar, _ = spell_checker_module.correct_grammar(text)
18         return render_template('index.html', corrected_text=corrected_text, corrected_grammar=corrected_grammar)
19
20 @app.route('/grammar', methods=['POST', 'GET'])
21 def grammar():
22     if request.method == 'POST':
23         file = request.files['file']
24         readable_file = file.read().decode('utf-8', errors='ignore')
25         corrected_file_text = spell_checker_module.correct_spell(readable_file)
26         corrected_file_grammar, _ = spell_checker_module.correct_grammar(readable_file)
27         return render_template('index.html', corrected_file_text=corrected_file_text, corrected_file_grammar=corrected_file_grammar)
28
29 index.html X
templates > index.html > html > head > meta
1 <html lang="en">
2 <body>
3 <h1 class="text-center">Grammar And Spell Checker</h1>
4 <div class="container">
5 <form action="/spell" method="post" enctype="multipart/form-data">
6 <div class="form-group">
7 <label for="text">Type your text here</label>
8 <textarea class="form-control" id="text" name="text"></textarea>
9 </div>
10 <button type="submit" class="btn btn-primary">Correct</button>
11 </form>
12 {% if corrected_text and corrected_grammar %}
13 <h5>Corrected Word: <br> {{corrected_text}}</h5>
14 <h5>Grammar Mistakes: <br> {{corrected_grammar}}</h5>
15 {% endif %}
16 </div>
17
18 <div class="container">
19 <form action="/grammar" method="post" enctype="multipart/form-data">
20 <div class="form-group">
21 <label for="file">Upload File</label>
22 <input type="file" name="file" class="form-control">
23 </div>
24 <button type="submit" class="btn btn-primary">Correct</button>
25 </form>
26 {% if corrected_file_text and corrected_file_grammar %}
27 <h5>Corrected Word: <br> {{corrected_file_text}}</h5>
28 <h5>Grammar Mistakes: <br> {{corrected_file_grammar}}</h5>
29 {% endif %}
30 </div>
31
32
```

# Grammar And Spell Checker

Type your text here

[illegible]

Correct

Upload File

Choose File No file chosen

Correct

# Grammar And Spell Checker

Type your text here

Tomorrow, I am going to the market to buy some groceries. I don't like going there on Saturdays because it's always too crowded. However, I have no choice since we are running out of food and I need to cook for my family. I will also be meeting my friend who is visiting from another city.

**Corrected Word:**

Tomorrow, I am going to the market to buy some groceries. I don't like going there on Saturdays because it's always too crowded. However, I have no choice since we are running out of food and I need to cook for my family. I will also be meeting my friend who is visiting from another city.

## Grammar Mistakes:

[ "MORFOLOGIK' RULE EN US",  
"BY BUY", "MORFOLOGIK' RULE EN US", "BASE FORM",  
"AUXILIARY DO WITH 'INCORRECT' VERB FORM",  
"TO TOO", "MORFOLOGIK' RULE EN US",  
"MORFOLOGIK' RULE EN US", "NONSPRS VERB",  
"MORFOLOGIK' RULE EN US", "MORFOLOGIK' RULE EN US",  
"MORFOLOGIK' RULE EN US"]

Upload File

Choose File No file chosen

Correct





# Conclusion and Future Enhancements



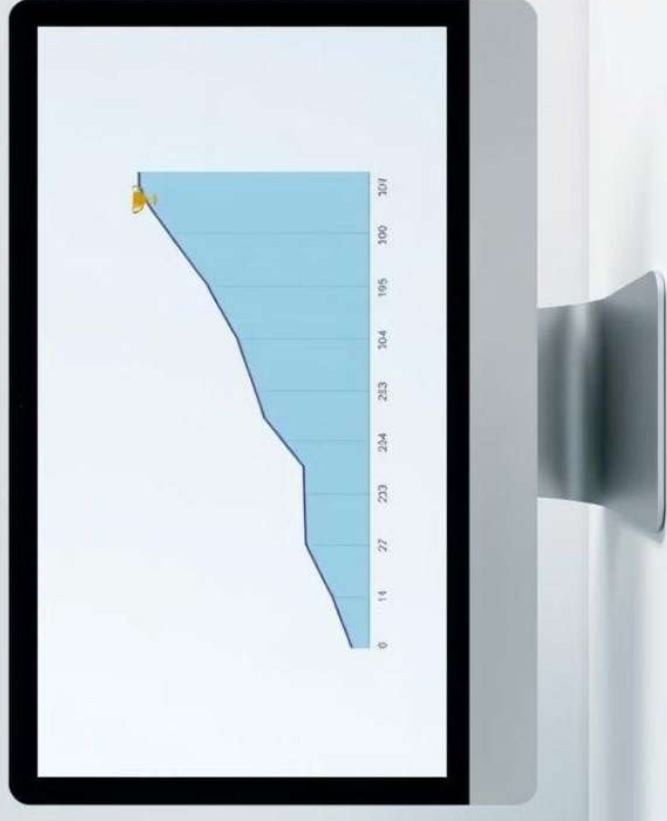
## Accuracy

The developed grammar and spell checker achieves a satisfactory level of accuracy in identifying and suggesting corrections for common errors.



## Future Enhancements

Further improvements can be made by incorporating advanced NLP techniques, expanding the training dataset, and addressing domain-specific language variations.



# Thank You!