

# KENYAN CONSTITUTIONAL AGENT

*LEVERAGING AI FOR CIVIL EDUCATION*

**PRESENTED BY:**

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THE  
Constitution  
OF  
Kenya  
2010

Laws of Kenya

ALG

## PROJECT OVERVIEW

**Goal:**

Create an AI-powered agent to make the Kenya Constitution (2010) easy to access and understand.

**Approach:**

- Convert constitutional text into structured, machine-readable data.
- Use AI and semantic search to answer natural language queries.
- Provide accurate references to specific chapters and articles.

**Outcome:**

A user-friendly tool that promotes civic literacy and empowers citizens with accessible legal knowledge.

## BUSINESS UNDERSTANDING

- **Context:** Constitution is long, complex, and legalistic  
→ hard for citizens to navigate.
- **Problem:** Traditional consultation is costly & time-consuming.
- **Objective:** AI agent that supports English & Swahili, gives accurate, clear answers, and cites articles.
- **Stakeholders:** Citizens (youth focus), NGOs, government institutions.
- **Impact:** Empowerment, accessibility, and scalability.

## DATASET OVERVIEW

- **Source:** Kenya Constitution (2010).
- **Structure:** 26 chapters, 260 articles.
- **Format:** Preprocessed into JSON/CSV with metadata.
- **Example fields:** chapter, article, content, metadata.

## DATA PREPARATION

- **Cleaning:** Removed formatting & footnotes.
- **Segmentation:** Split long articles into chunks.
- **Metadata:** Added chapter/article references.
- **Embeddings:** Generated semantic vectors for each article.

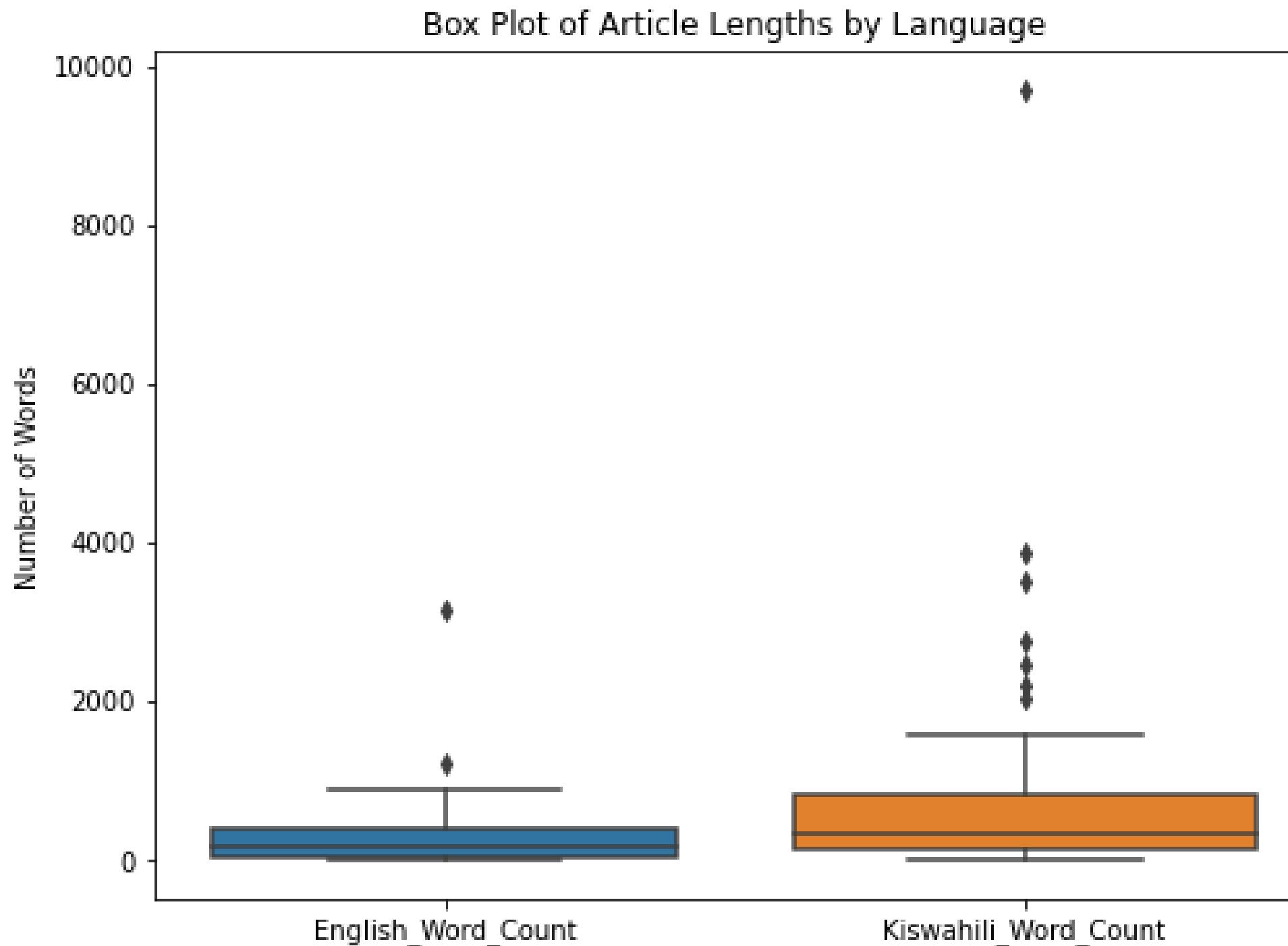
# EXPLORATORY DATA ANALYSIS

**Goal:** Understand the structure of the cleaned constitution dataset and spot preprocessing needs that will guide NLP pipeline design

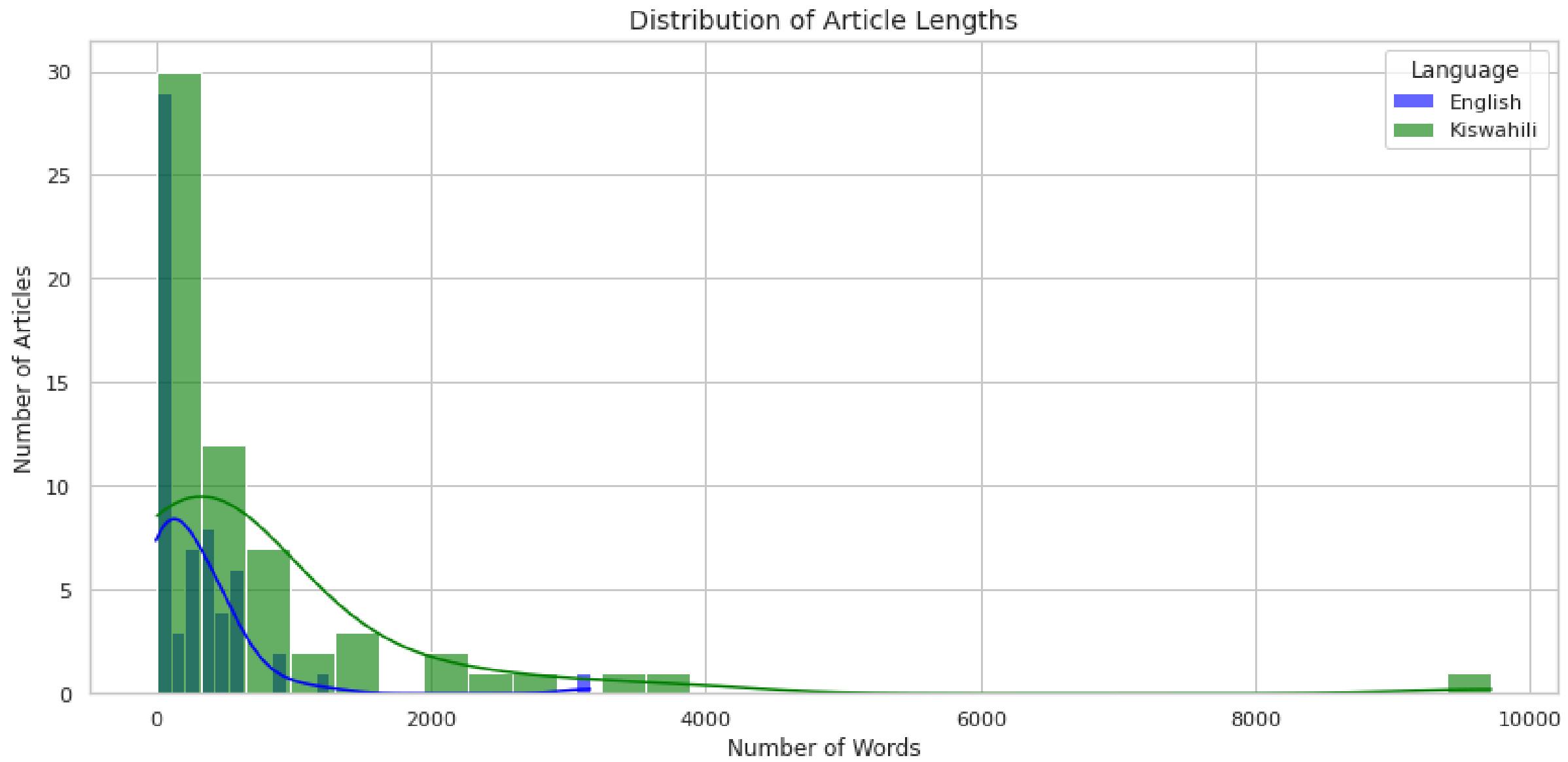
- Analyzed English & Kiswahili text
- Counted articles & sections
- Checked text length distribution
- Identified common words & phrases
- Reviewed topic coverage across chapters

## Length categories

- Kiswahili articles show greater variation and tend to be longer.
- Both languages contain a few very long outliers, with Kiswahili reaching nearly 10,000 words.



# Length category by word count



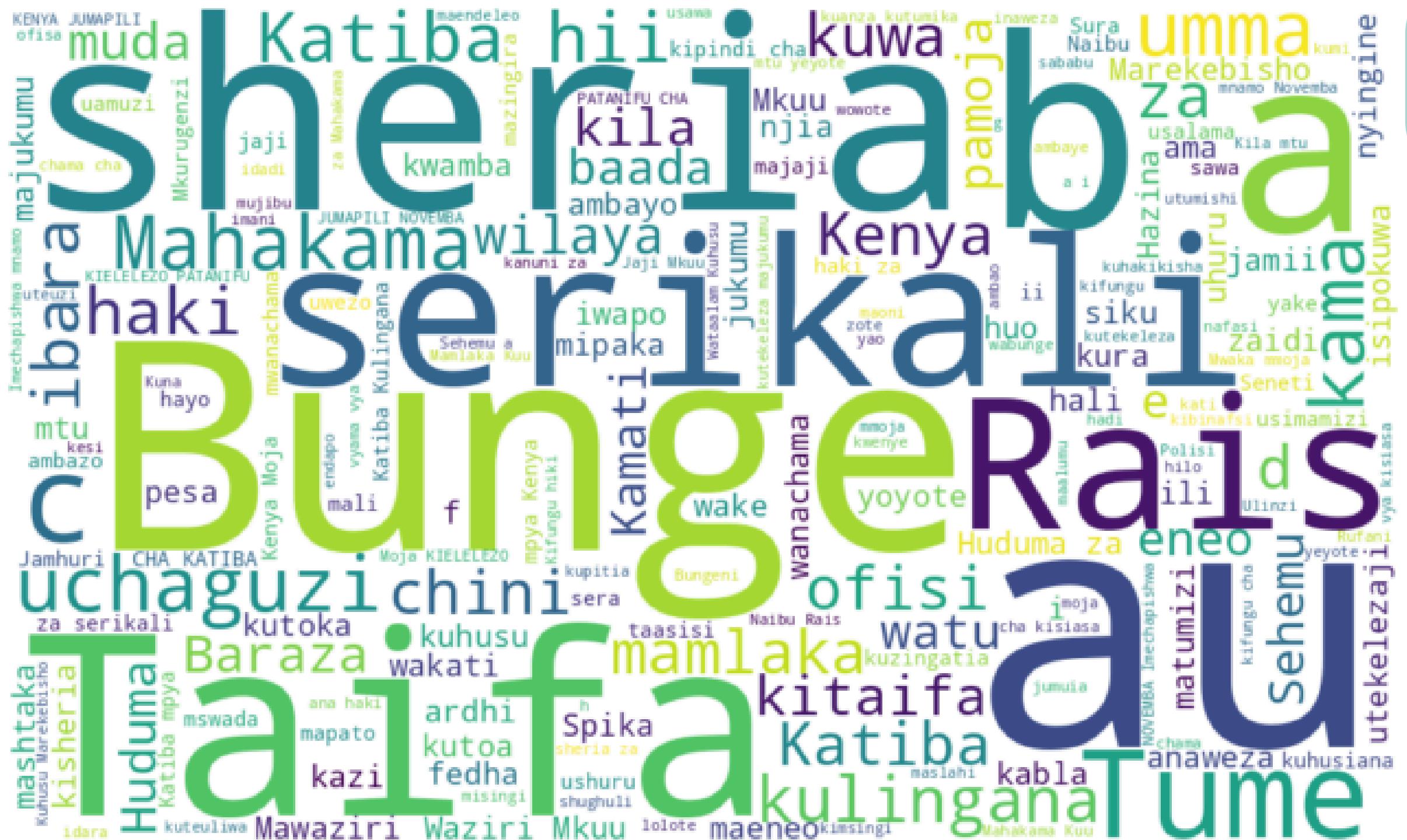
- Most articles in both English and Kiswahili are short (under 500 words).
- A few articles are much longer, creating a right-skewed distribution.
- Kiswahili articles show greater variability and some extreme outliers nearing 10,000 words.
- English articles are generally more concise and consistent in length.



# Word cloud of most popular words (English)

- The distribution is right-skewed with a few very long articles.
  - English articles are generally shorter and more consistent.

## Word Cloud - Kiswahili Text



# Word cloud of most popular words (Swahili)

- Kiswahili articles show more variation and longer extremes.

# AI AGENT WORKFLOW

**steps:**

- Input user query.
- Convert to embedding.
- Retrieve relevant article(s) from vector DB.
- AI generates context-aware answer + citation.

Tools: Python, LangChain, OpenAI embeddings, FAISS, Streamlit.

# User Experience Preview

## KE Constitution QA Agent

Ask a question about the Kenyan Constitution and get relevant answers!

Enter your question:

What is the role of the president

Number of top results (k):

3

- +

Get Answer

### Answer:

The national executive comprises the President, the Deputy President and the rest of the Cabinet.

(Section: Article 130) The President is the Head of State and Government, Commander-in-Chief of the Defence Forces, and a symbol of national unity. (Section: Article 131) The President shall address Parliament annually on measures taken and progress achieved in realising national values, submit a report for debate, and nominate key state officers. (Section: Article 132)

## FINDINGS

- Deep learning achieved high accuracy & avoided overfitting
- Naive Bayes & AdaBoost performed best (fast & accurate)
- Neural networks are heavier but better for complex text
- ML = easier to interpret, DL = stronger for non-linear patterns

# RECOMMENDATIONS

- Simplify interface + add Kiswahili support
- Update with amendments & user feedback
- Scale to mobile apps & APIs
- Show article references in plain language
- Explore chatbots & transformer models

## NEXT STEPS

- Expand to laws & case studies
- Partner with NGOs, schools, government.
- Gather feedback & drive adoption
- Optimize backend for speed & scale

# QUESTIONS?

*“Your Constitution, simplified through AI.”*

# Thank you

*Empowering kenyans through ai driven civic education*