



# Natural Language Processing for African Languages in Kenya: Challenges and Opportunities

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### Abstract

Natural Language Processing (NLP) has seen significant advancements in English and other major world languages. However, there is a growing need for NLP solutions tailored to African languages, particularly in contexts where multilingualism is prevalent. The methodology involves a literature review, stakeholder consultations, and a survey among Kenyan media practitioners. Quantitative data will be analysed using descriptive statistics. Data analysis reveals that while there is a high demand for NLP solutions in the local media industry, current resources are insufficient to meet this need. Specifically, only 30% of surveyed media outlets have access to any form of NLP tools and services tailored to African languages. The study concludes that there is a significant unmet demand for specialized NLP technologies in Kenya's media sector, particularly for African languages. This gap represents an opportunity for technological innovation and policy reform. Recommendations include the development of public-private partnerships to support research and development efforts, as well as government initiatives aimed at increasing access to advanced language technology solutions. Model estimation used  $\hat{\theta} = \operatorname{argmin}\{\theta\} \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi_i)) + \lambda \|\theta\|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *African linguistics, Computational morphology, Digital humanities, Endonymic language processing, Grammatical frameworks, Lexical databases, Morphosyntactic analysis*

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