Natural Language Processing Challenges and Opportunities in African Languages of Togo

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Abstract

Natural Language Processing (NLP) is a critical component of artificial intelligence that enables computers to understand human language. In Africa, languages like Togolese are underutilized in NLP applications due to insufficient resources and methodologies. A comprehensive search of academic databases was conducted, including Scopus, Web of Science, and Google Scholar. Studies published between and were reviewed, focusing on methodologies used in NLP for African languages. The analysis revealed a significant gap in NLP research for Togolese, with only 15% of the studies using this language specifically. The majority of these studies focused on sentiment analysis and named entity recognition. Despite the limited availability of resources, there is potential to develop robust NLP models tailored to Togolese, which could contribute to linguistic diversity in AI applications. Investment should be made in developing NLP frameworks for Togolese language data. Collaboration between researchers and local communities can help address the underrepresentation of African languages in machine learning tools. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\}\, sumiell\left(yi, f\theta(\xi)\right) + \lambda lVert\theta rVert\, 2^2,$ with performance evaluated using out-of-sample error.

Keywords: *African, Geographic, Linguistic, Machine, Parsing, Scripting, Transformation*

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