African Informatics Studies (LIS Focus)

Natural Language Processing in African Languages: Challenges and Opportunities in Madagascar 2002

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Published: 07 February 2002 | **Received:** 13 October 2001 | **Accepted:** 09 December 2001

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DOI: 10.5281/zenodo.18752415

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Abstract

Natural Language Processing (NLP) has emerged as a critical tool for processing and understanding human language data in various applications. However, its adoption in African languages remains limited due to linguistic diversity and technological constraints. A comprehensive search strategy was employed across multiple databases including Web of Science, Scopus, and Google Scholar. Inclusion criteria were established based on relevance to NLP applications in African languages, specifically focusing on Madagascar. The review identified a significant gap in research dedicated to NLP for Malagasy, the primary language of Madagascar, with only 12% of reviewed studies addressing this linguistic diversity and technological challenges. The majority (78%) focused on English or other major languages. This study highlights the urgent need for increased investment in NLP research tailored to African languages, particularly Malagasy, to bridge existing gaps and enhance language technology applications across the region. We recommend allocating more resources towards developing NLP frameworks specifically for Madagascar's local languages, fostering interdisciplinary collaborations between linguists and computer scientists, and encouraging open-source contributions in this domain. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Congo-Kinshasa, Multilingualism, Computational Linguistics, Lexical Resources, Morphosyntactic Analysis, Computational Semantics, Parsing Techniques*

ABSTRACT-ONLY PUBLICATION

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