

Research on text summarization methods and syntactic conversion of Vietnamese sign language

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Abstract: This study proposes a method for Vietnamese text summarization and syntactic conversion into Vietnamese Sign Language (VSL). Addressing the communication barrier between the hearing community and the Deaf, the research focuses on transforming written Vietnamese, which follows a Subject-Verb-Object (SVO) structure, into VSL's characteristic Topic-Comment (TC) syntax. The methodology integrates a two-stage process: first, an extractive summarization algorithm reduces textual redundancy while preserving core semantic content; second, a rule-based syntactic converter applies linguistic transformation rules to map SVO structures into TC sequences, incorporating spatial and gestural markers essential for sign language. Experiments on a curated Vietnamese news corpus demonstrate that the proposed system achieves high fidelity in both content retention and syntactic accuracy, with a BLEU score of 0.72 for the conversion task. The findings underscore the potential of this approach to facilitate real-time accessibility tools, such as sign language avatars, thereby enhancing information equity for the Vietnamese Deaf community.

Keywords: Vietnamese text summarization, Vietnamese sign language syntax, Natural language processing, Text-to-sign language conversion