Digital tools for sign language research: towards recognition and comparison of lexical signs

Fragkiadakis, M.

1. Developing sign language corpora in real-world conditions is crucial for capturing the authentic variability and complexity of sign languages, thereby enhancing the accuracy and applicability of sign language processing systems.
2. Recognising that not all sign language materials are gathered in the same way, sign language processing systems must be designed with adaptability and flexibility to cater to the diverse methods of data collection.
3. It is imperative that sign language processing systems are developed and tested on low-resource languages to promote inclusivity and ensure that technological advancements in sign language processing benefit a broader spectrum of sign language communities.
4. The effectiveness of a reverse search functionality in a sign language lexicon, where users sign a query to retrieve matching signs, is significantly influenced by the user's proficiency in the sign language, with varying degrees of accuracy and effectiveness observed at different proficiency levels.
5. Dynamic Time Warping (DTW) is a valuable computational tool for sign language recognition tasks, providing a robust methodology that effectively handles the temporal variations in signing patterns.
6. A tool designed for the measurement and visualisation of variations in the dominant hand's movements across different sign languages can effectively discern and distinguish similar (true friends) and dissimilar (false friends) signs between these languages, thereby opening a window onto their comparative linguistic characteristics.
7. The development of machine and deep learning methodologies for sign language recognition should be guided by stringent ethical considerations. These considerations must include addressing issues related to accessibility, inclusivity, privacy, and consent, to ensure that the technology is both effective and respectful of the rights and needs of the deaf community.
8. Integrating linguistic knowledge, computer vision, and machine learning techniques is crucial for the success of sign language processing systems. An interdisciplinary approach is essential for a comprehensive understanding of the complexities of sign languages, which in turn leads to the development of more effective and context-aware systems.
9. In the development of successful sign language processing systems, the active participation of deaf signers and insights from the deaf community are indispensable. Their involvement extends beyond mere annotation to include crucial roles in validating and refining these systems, underscoring the need for a partnership that merges technological advances with deep linguistic insights from within the deaf community.
10. Automated annotation tools, when applied to sign language corpora, have a transformative effect on the field of linguistics by enabling faster and more precise analysis of sign language data, which in turn facilitates deeper insights into sign language structure and evolution.
11. The effectiveness of sign language processing tools is significantly enhanced by a user-centric design, which prioritises the diverse needs and experiences of deaf sign language users. This approach must consider varying levels of language proficiency and familiarity with technology within the deaf community.
12. The attainment of equity requires the synergistic efforts of communities bound together in their resolve to dismantle the barriers of class inequality.