

Classifier Predicate Representations for an English to American Sign Language Machine Translation System

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Although Deaf students in the U.S. and Canada are taught written English, the challenge of acquiring a spoken language for students with hearing impairments results in most Deaf high school graduates reading at a fourth-grade level (Holt, 1991). Machine translation (MT) software that could translate English text into an ASL animation could fundamentally improve Deaf individuals' access to information, communication, and services.

Unfortunately, certain properties of ASL make this translation task difficult. Signed languages make use of the space around the signer for a variety of communicative purposes ? one being the production of constructions called ?classifier predicates.? These complex movements use the space around the signer to describe a three-dimensional scene or event in a spatially metaphorical manner.

Classifier predicates challenge traditional definitions of what constitutes linguistic expression, and they oftentimes incorporate spatial metaphor and scene-visualization to such a degree that there is debate as to whether they are paralinguistic spatial gestures, non-spatial polymorphemic constructions, or compositional yet spatially-parameterized expressions (Liddell, 2003).

Although many English concepts lack a fluent translation without classifier predicates, no previous English-to-ASL MT system has addressed how they can be generated. This talk will discuss several new computational representations and translation processes for classifier predicates ? many of which correspond to particular competing linguistic models of these phenomena. The most computationally and linguistically attractive design makes use of three-dimensional virtual reality modeling software, and its associated translation process can be incorporated into an English-to-ASL MT system to give it the capability of producing classifier predicates.

Key terms: machine translation, natural language generation, American Sign Language, classifier predicates

References

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