

Corpus Phonetics in the Signed Modality: One Approach

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Although there is an increasing number of resources and tools for working on corpus phonetics in signed languages, they still lag behind those available for spoken languages. Here, we outline a software tool, *Sign Language Phonetic Annotator-Analyzer* (SLP-AA; Hall et al. 2022), which is intended to facilitate fine-grained, form-based transcription of sign languages. We also demonstrate how it is being used to transcribe the *Canadian Dictionary of American Sign Language* (CD-ASL; Bailey & Dolby 2002; see example entry for the sign RED in Fig. 1), to be used as a lexical database. Both the software and the dictionary transcription are works in progress.

The basics of sign language phonology are fairly well established in terms of having contrastive parameters of (at least) hand configuration, movement, location, and non-manual markers (Fenlon et al. 2017). However, there is no universally agreed-upon transcription system for sign languages, making phonological research (especially corpus-based research) difficult. Collections of sign language videos are phonetically faithful but do not lend themselves to search, abstraction, or analysis. Collections of data that are glossed semantically into a spoken language typically do not contain enough form-based detail for phonetic or phonological analysis. The HamNoSys transcription system (Hanke 2004; see example in Fig. 2) is the most complete system currently available, but it requires a specialized font and does not lend itself to phonologically oriented corpus-based searches (see also discussion in Hochgesang 2014; note that there is an XML mark-up version of HamNoSys, SiGML, used to create avatars (Neves et al. 2020)).

The SLP-AA software can be used to transcribe signs in any sign language using a modular approach, with modules for each phonological parameter. Each module includes text-based menus to select written phonetic transcriptions for that component (see e.g. Fig. 3, showing part of the movement module selection). These text-based menus simultaneously facilitate transparent understanding of the transcription and consistent coding of characteristics. Timing relations are also easily captured using an abstract ‘x-slot’ system, where one x-slot approximately corresponds to one syllable (Wilbur 2011). The summary of the transcribed sign RED in Fig. 4 shows, for example, that while the straight, downward path movement (H1.Mov1) takes up one x-slot, the hand configuration is different at the beginning vs. the end (H1.Config1 vs. H1.Config2). Search capabilities will allow users to easily find signs with various phonetic characteristics, which is a baseline requirement for understanding the lexical and phonological structure of a language.

As a starting point to illustrate the utility of the software, we are in the process of using it to transcribe the *CD-ASL*, in consultation with native signers. Published only in print form, it contains over 8700 entries, typically including a general description of the form of the sign and a line drawing. While the handshapes are categorically labelled, the rest of the form descriptions vary considerably from sign to sign. Our transcribed version will be consistently coded and digitally available, facilitating searches and phonological analysis. As of submission, approximately 2000 signs have been transcribed, with entries prioritized by their inclusion in another ASL database, ASL-Lex (Sehyr et al. 2021). This selection process allows for direct comparison both of transcription technique and of diachronic and dialectal variation. Already, the transcription process has highlighted under-studied areas in the phonological and phonetic description of signs. This includes problems with the ways in which phonetic directions of movement in signs are typically described, the under-researched nature of the role of the forearm in lexical representations, and the potential utility of relative rather than absolute movement specifications. In this presentation, we will elaborate on the functions of the software, the tools and lexical resources under development, and their utility for active phonological research and insight into signed languages.

Figure 1: Entry in the *CD-ASL* for RED:



red: *adj.* the colour of blood. *He wore a red shirt and white shorts for Canada Day.*

SIGN: Vertical right 'ONE' hand is held with palm facing the body and tip of forefinger touching the lower lip. As the hand is then drawn very firmly forward at a downward angle, the forefinger crooks to form an 'X' shape.

Figure 3: Partial movement menu for RED in SLP-AA:

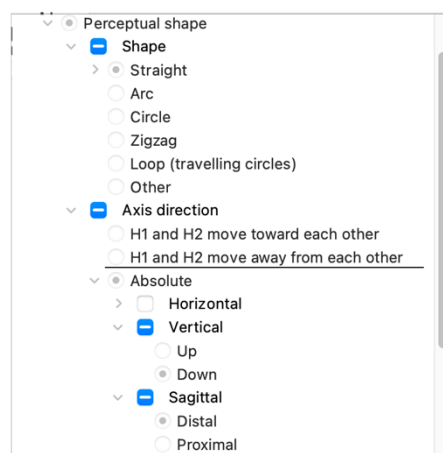


Figure 2: HamNoSys transcription for RED:

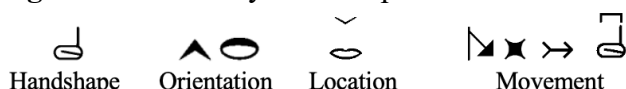
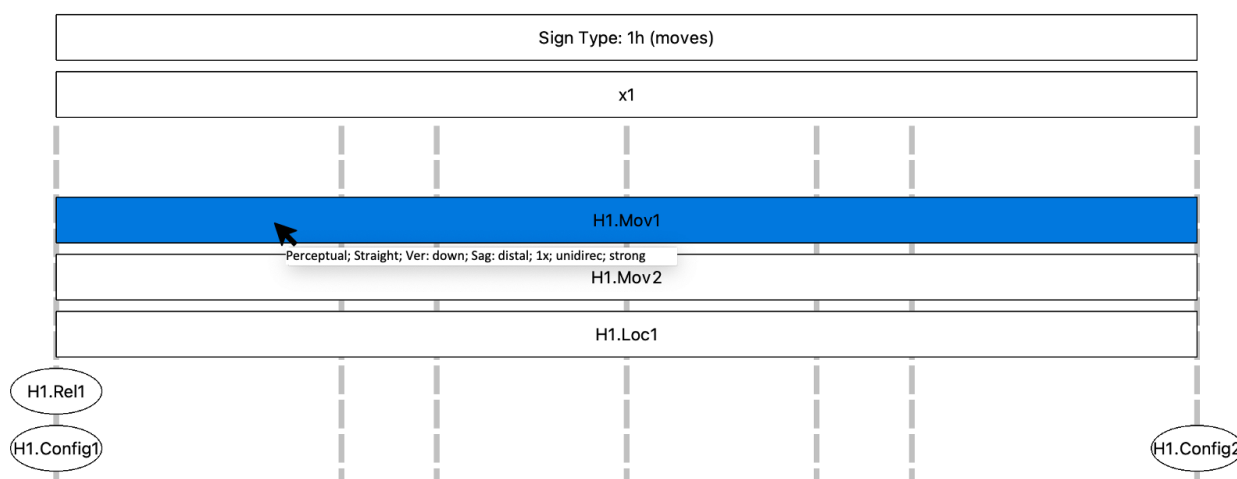


Figure 4: Summary window for transcription of RED in SLP-AA:



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