Ongoing development of a finite-state transducer based morphological model for Niitsi'powahsin

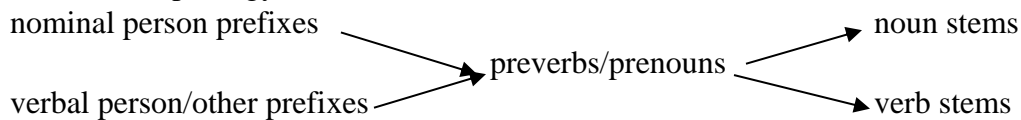Katherine Schmirler[1], Inge Genee[1], Antti Arppe[2], Dominik Kadlec[1]

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In this talk, we give an update to the current state of the finite-state transducer (FST) based morphological model for Niitsi'powahsin (Blackfoot). We discuss ongoing developments in the nominal and verbal sections of the model (as described in Kadlec et al. 2022; Kadlec 2023), integration of the demonstrative section (Schmirler et al. 2023; accepted), and the inclusion of personal pronouns.

For the nominal and verbal morphology, we have streamlined the model, combining morphology where it is shared, especially with respect to prestem material, as in (1). We have addressed areas where morphophonology can better handle differences than enumerating allomorphs in the morphotax, such as the reciprocal suffix (2). Similarly, some morphophonological rules have been streamlined and inconsistencies corrected.

(1) Prestem morphology

nominal person prefixes → preverbs/prenouns → noun stems
verbal person/other prefixes → preverbs/prenouns → verb stems

(2) Reciprocal

    a. morphotax only (two forms with no context distinction):

       -otsiiyi

       -tsiiyi

    b. with morphophonology:

       -otsiiyi; o → Ø / t _

We present updated descriptive statistics of a corpus of Niitsi'powahsin texts, and briefly contrast the results provided by the newer and older model versions. We also discuss future directions for development, including the ongoing process of preparing the model for spell checking, paradigm generation in an intelligent online dictionary, and the eventual integration of a syntactic model for more detailed corpus analysis. Streamlining and other improvements to the model serve an important role in these future developments, both in terms of accuracy for analysis and generation, but also in reducing the number of forms provided in paradigm generation.

References

Kadlec, Dominik, Antti Arppe, Katherine Schmirler, and Natalie Weber. 2022. Developing a computational model of Blackfoot morphology: Why it is important and how we can learn from it. Presented at the 54th Algonquian Conference in Boulder, Colorado, October 20-23, 2022.

Kadlec, Dominik. 2023. A computational model of Blackfoot noun and verb morphology. M.A. thesis, Indigenous Studies, Iniskim University of Lethbridge. https://hdl.handle.net/10133/6635.

Schmirler, Katherine, Inge Genee, Dominik Kadlec, and Antti Arppe. 2023. A Computational Model for Blackfoot Demonstratives. Presented at the 55th Algonquian Conference in Edmonton, Alberta, October 19-22, 2023.

Schmirler, Katherine, Inge Genee, Dominik Kadlec, and Antti Arppe. accepted. A Computational Model for Blackfoot Demonstratives. In *Papers of the 55th Algonquian Conference*. Michigan: Michigan University Press.