

Grammatical descriptions for computational modelling: A first look at Blackfoot morphophonological modelling

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This talk will present the initial stages of modelling Blackfoot phonology in the Foma finite state transducer (FST) compiler (Hulden, 2009), using rewrite rules drawn from the morphophonological rules laid out for Blackfoot in Frantz's (2017) grammar of the language. The talk offers a case study of the application of existing grammatical description to a morphophonological model with a nearly one to one correspondence, facilitating remarkably fast development of at least the morphophonological component of an FST model, even without comprehensive knowledge of either the language or the formalism. The rules in Frantz (2017) present a fairly comprehensive overview of the morphophonological changes that occur with Blackfoot inflectional morphology, and the initial modelling is used to exemplify how these rules are converted to the syntax required for the model, rule order adaptations that arose, how the model is tested and performs on the basis of test cases, how orthographical conventions can cause issues in constructing the model, and how such issues can be handled. These first steps of modelling show the effectiveness of well-described morphophonological rules in building a model, and highlights potential benefits of constructing the morphophonological component of a morphological model ahead of the list of lexemes and morphological rules, as the morphophonological component may inform the morphological in the eventual creation of a full FST-based morphological model. The resulting model is far from its final form, but the tests show promising results in the accurate application of the rules.

References

- Frantz, D. G. (2017). *Blackfoot Grammar* (3rd ed.). University of Toronto Press.
- Hulden, M. (2009). Foma: a finite-state compiler and library. In *Proceedings of the Demonstrations Session at EACL 2009* (pp. 29-32).