In this research we perform computer processing of Ainu language with the use of various NLP techniques. Ainu language is an endangered language close to extinction. At present linguists and anthropologists make a great effort to preserve the language by analyzing and understanding it. However, most of the work in this matter is done manually, which makes it an uphill task. Previously we have presented POST-AL, a part-of-speech tagger for Ainu language. This paper describes recent improvements in the system as well as other enhancements made with an aim to help Ainu language researchers. In particular, we have enhanced the POST tagger with analysis of deeper morphological information. We have added a translation support tool for Ainu language translators and made a first step toward deeper syntactical analysis of Ainu language by creating a simple shallow parser.

## Previous Research on Ainu language

**Linguistic Studies:**
- collections of Ainu epic stories and myths (Chiri, 1978; Kayano, 1998; Ptaszyński and Majewicz, 2004)
- grammar descriptions (Chiri, 1974; Murasaki, 1979; Refsng, 1996; Kindaichi, 1993; Sato, 2009)

**NLP-related Studies:**
- attempt to transform Ainu language dictionary into an online database (Bugeva, 2010)
- analytically gather word translations from texts (Echigo-ya et al., 2004)
- analysis / retrieval of hierarchical Ainu-Japanese translations (Azumi and Momouchi, 2008a,b)
- annotating Ainu "yukar" stories for machine translation system (Momouchi et al., 2008)
- a system for translation of a system of Ainu topological names (Momouchi and Kobayashi, 2010)

Our previous work:
- created POST-AL, a simple POST tagger for Ainu language (Momouchi and Ptaszyński, 2012)

**References**

In 1. token (word, morpheme, etc.)

**Conclusions and Future Work**

We described our research on developing Ainu language analysis toolkits. Described recent improvements to the previous system as well as other enhancements made with an aim to help Ainu language researchers. In particular:
- enhanced POST tagger with analysis of morphological information, added translation support tool for Ainu language translators, created simple shallow parser (chunker).
- In the near future we plan to:
  - Compare different tokenization approaches (ex. Huang et al., 2007).
  - Add other dictionaries (Nakagawa, 1995; Tamura, 1998).
  - Perform a robust evaluation of the annotations with the help of several experts and Ainu native speakers.
  - Create Deep Syntactic Parser
  - Add Named Entity Recognition
  - Improve the system for even better performance.
  - Apply to machine translation.

**View Selection**

Shallow Parser

Difficult to create a fully functional parser.

General rules for sentence chunking should work.

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