In modern society it is necessary to provide comfortable access to information resources for people who communicate using sign language (SL). To solve this problem it is necessary to develop specialized software tools that help in the sign language study and translation.

Sign language is an independent visual-spatial language in which for information transfer hand gestures, facial expressions, lip articulation are used. Sign language has its own grammar structure that is distinct from spoken languages. Ukrainian sign language (USL) is a mean of communication system for deaf people and contains about two thousand signs, most of which are performed with both hands. There is no international sign language and even Ukrainian sign language has several dialects.

One of the problems of Ukrainian sign language computer translation is the lack of a formally adopted writing system for SLs. Therefore, for Ukrainian sign language translation we must create a writing system for USL. The main problems of Ukrainian sign language computer translation are: translation ambiguity (the number of words of sign language is different from the number of words of spoken language), grammar of sign language is different from grammar of spoken language, sign language has its own word order in sentences), using finger spelling, etc. The lack of Ukrainian sign language research in the sphere of grammar complicates USL machine translation.

The authors deal with development of computer Ukrainian sign language translation. One of the tasks is to create rule-based machine translation system. We built a small corpus of Ukrainian sign language sentences. USL is annotated by gloss.

The modern computer translation systems of sign languages in the world were investigated. Basic translation methods that can be used for Ukrainian sign language translation were considered. The rules for Ukrainian sign language machine translation based on its syntax investigation were constructed.

Keywords: Ukrainian sign language, bilingual corpora, computer translation, grammar.