

6 • 7 Korea

Lee Kisik

National Computerization Agency, Korea

Park Changho

Systems Engineering Research Institute, Korea

[1] Government's Viewpoint and Assistance for the Machine Translation

The Ministry of Science and Technology (MOST) is the governmental body chiefly responsible for assisting machine translation research in Korea. The MOST assistance program dating back to 1983 when the Korean-Japanese machine translation project, the first of its kind in Korea, was launched today covers Korean-English machine translation research as well. In Korea, the translation between Korean and English is in the highest demand. The primary reasons for the selection of Korean-Japanese machine translation research as the initial target of government assistance were that there was relatively high demand for translation between the two languages and that the research didn't involve much risk of failure due to the linguistic affinity between the two languages.

The MOST is also assisting the development and training of research manpower at universities by aiding their small scale NLP research projects through the KOSEF under its umbrella.

Another area of interest for the MOST is the development of Korean NLP technology by drawing on Artificial Intelligence (AI) technology. In order to attain this goal, the Korean NLP research is incorporated into the national projects for the development of AI technology and universities and research institutes are commissioned to conduct it.

The motives for the continued assistance of MOST for machine translation research in Korea are three-fold.

- (i) Machine translation is considered inevitable to respond to the growing public call for time and energy saving translation systems, and the acquisition of workable Korean NLP technology is viewed as urgent in connection with the development of next-generation computer software.
- (ii) This requires the improvement of the qualifications of research personnel at universities and research institutes and the upgrading of their research levels.
- (iii) The Korean-Japanese machine translation project has brought about positive results and, thus, has made it easier to solicit government assistance for machine translation research projects.

(a) Government's Viewpoint

The MOST evaluates that the development of the Japanese-to-Korean machine translation system, jointly conducted with Fujitsu of Japan has been a successful project. The system, which connects the user's peripheral with a large host computer, is now in the stage of being tested for commercial application. At the same time, the ministry recognizes the importance of acquiring Korean NLP technology capable of analytical and intelligent processing of the Korean language. To achieve this goal, the ministry is striving to foster a more efficient cooperative relationship among universities and research institutes and work out comprehensive and long-term assistance programs for their research projects.

The fact, however, remains that a few decision makers at the MOST, even though they admit the necessity of machine translation, are skeptical of its successful commercial application. This skepticism stems from the low job performance due to unsatisfactory translation quality, low cost-efficiency and limited usage of the already developed machine translation system. Consequently, they have a negative attitude toward the expansion of government assistance for machine translation research.

As a matter of fact, the first Japanese-to-Korean machine translation system, running on a micro-computer and marketed last year, has not received a very positive response from the public because it failed to overcome the historic shortcomings of machine translation, namely, poor quality and low productivity. This has sent a warning signal to the companies which were either already engaged or interested in machine translation research. As a result, today they became more cautious about participating in the research.

Despite such skepticism and negative views, however, the MOST remains firmly committed to rendering continued assistance for machine translation research as a groundwork for the ultimate R/D of NLP technology. Along with this, the ministry is said to be considering entrusting the AI Research Association (established on Dec. 1985) under the Korean Information Science Society (KISS) with the task of spurring the sophistication and expansion of machine translation system research to ultimately include the development of intelligent NLP technology capable of understanding the natural language.

(b) Prospects for Government Assistance

The MOST has yet to announce any concrete plans for aiding machine translation research projects in the long term. But the past history of MOST assistance for machine translation projects and the on-going national research projects indicate that the MOST will focus on two particular areas.

First, despite technological limitations, the ministry is expected to continue its assistance for machine translation projects designed to develop practical translation systems for particular language pairs where demand is relatively high.

Second, it is believed that the MOST will vigorously push forward with Korean NLP research as part of an effort to develop intelligent next-generation computer technology. In doing so, it will draw on the results of artificial intelligence researches.

The MOST assistance in the first area will be implemented on a short-term, case-by-case basis. By contrast, in the second area the ministry will act under long-term plans. The plans will call for building a cooperative research structure linking universities and national research institutes and, if necessary, foreign research organizations. Examination of the on-going research projects sponsored by the MOST enables us to more clearly forecast the future direction of Government assistance for machine translation research.

- (i) The MOST, in addition to the Korean-Japanese machine translation project, has commissioned the SERI/KAIST to conduct a joint research project with GETA/CNRS of France to develop English-to-Korean and French-to-Korean machine translation systems.
- (ii) The MOST now has two national projects underway aimed at the R/D of Korean NLP technology based upon artificial intelligence.

In the first case, the ministry arrived at the conclusion that the development of an machine translation system can be more effectively done if the project is jointly conducted with the nation whose language is involved. Accordingly, at the Korean-French Science Ministers' meeting in Sept.1985, Korea and France reached an agreement to conduct joint machine translation research. Under that agreement, SERI of Korea and GETA of France were chosen as research partners to first develop English-to-Korean machine translation system. The MOST will support the joint research project for the coming three years. In the first two years, the objective will be to develop a prototype system for research purpose. Then, a feasibility study will be con-

ducted as to the commercial applicability of the system. Based on the results of the study, related industries in both countries will be called in for joint production of the system for commercial use.

The two national projects on the development of Korean NLP technology are being carried out by universities and research institutes under the supervision of the AI Research Association at the KISS.

The first project, which was launched early this year, is led by universities and aims at developing Korean NLP technology for machine translation application. The second project will start in 1988. The objective of the project to be led by research institutes is to develop Korean interface or front-end technology. The main thrusts of the project are development of natural language analyzing technology and related tools with a larger scope of application, and researching natural language understanding technology capable of intelligent Korean NLP.

Therefore, it is expected that AI techniques such as knowledge representation and inference mechanism, etc. will be more actively introduced to facilitate the research on NLP technology. To overcome the problems experienced by traditional machine translation researches, it is expected that NLP research in Korea will shift its focus from the development based upon the syntactic analysis technology to that based upon semantic and partially pragmatic analysis.

In this sense, the MOST has recently decided to revise its assistance policy in such a way that will propel coordination among research institutes and it is now gathering opinions from related academic institutions and research organizations. In the academic community, the AI Research Association has recently sponsored a NLP workshop with the participation of members of the Korean Linguistic Society and the Cognitive Science Society, where they explored the possibility of a joint participation in NLP research.

As mentioned above, the R/D Projects of machine translation which have constituted the core of NLP re-

search in Korea have been principally aimed at developing Korean-English and Korean-Japanese translation systems. The systems, however, are still far away from being commercialized. This is especially true in the event Korean is the source language because of the lack of research work to analyze the linguistic phenomena and properties of the Korean language.

In this context, the MOST will strengthen government assistance by realigning the research system and increasing its research assisting budget in order to spur the early acquisition of NLP technology and the development of practical machine translation technology.

- Under the reoriented research system, universities will lead basic research on NLP technology including machine translation, and research institutes will take the primary responsibility for integrating all available technologies and developing a prototype system as an initial step for the development of the targeted system in the long run. The companies will be allowed to join the project at the stage of practicalizing the prototype system in the form of financing partial budget for production of the commercial system.
- As for budgetary assistance, it is clear that the MOST will increase its financial support for machine translation research gradually based upon its evaluation of the importance of each project. The financial aid that the MOST has extended for machine translation research since 1983 up to now reaches nearly one million dollars.

In addition, the Ministry of Communication (MOC) is planning to include the utilization of machine translation system technology in its master plans for the development of information and communication technology. It is forecast that in the long run the MOST and the MOC will move in the direction of joint participation in machine translation research.