

# THE DEVELOPMENT OF DATA CAPTURING AND GEOCODING MODULES BY SPEECH-VOICE RECOGNITION

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## ABSTRACT

Men's desire for the human interface, due to the development of voice processing technology of computer, and the development of intelligent MMI (Man-Machine Interface) computer technology enabled us to operate computers with our voice without using keyboards or other input systems. Especially, by obtaining field data from the complicated surveying environment and applying the voice recognition technology to the actual surveying work, we can save a lot of working hours and costs. According to the result of this study, the real time Geo-Coding and graphic data-coding were possible by connecting the software engine which recognizes 50,000 different words and the voice recognition technology based on the super IC which recognizes 60 different words with the Total-station and the RTK-GPS. Voice recognition is a software technique that identifies the closest results in pre-entered recognition data by extracting and analyzing the voice features of people delivered on computer through mike. It is considered that the small-word recognition technique below 500 words can sufficiently process site surveying process. This study was proceeded to obtain site surveying data more conveniently by applying this voice recognition technique to the process of obtaining surveying data. In this study, we combined the Speech Recognition Engine 4.0 of Microsoft, capable of supporting multi language and recognizing universal multilateral voice, Voice Director 364 Module Chip of Sensory with recognition level of 99%, and PCBASIC One-chip hardware of Single Board Computer type, developed by Comfile Co., Ltd. In Korea. Also, we performed modularization and programmed to apply voice recognition technology to data acquisition and graphic processing by connecting Total Station, a measuring instrument, with Real Time Kinematic GPS, using Delphi 5.0, a software development language. As a result of applying voice recognition in site surveying, the length of movement among machine points in total station is long, and the daily work amount is about 700 points. In case of GPS, since it enables to survey about 2,000 points, the distance among surveying points are relatively short, and the configuration of equipment is complicated, it is more effective to use voice recognition technique. Hardware IC shows prompt response speed of 1-2 seconds, demonstrating the fact that recognition rate is over 90%. However, it was difficult since the recognition rate in software has 2-3 second latency, and the recognition rate is below 90%. Accordingly, it is more effective to use by hardware IC rather than to use software recognition method. However, it still has problem in that the available number of words to be recognized in hardware is only 60 words at maximum. By applying this voice recognition system, following conclusion can be drawn. 1)To use hardware voice recognition IC is much efficient in speed than voice recognition engine of MS. 2)Enable basic geo-coding processing by 25 few words 3) Has work efficiency in current surveying method than coding process. 4)Advantageous in measuring and coding in bad

weather conditions compared to existing method. Since new technology on voice recognition system due to the development of computer hardware and software can be applied to surveying areas in the future, voice recognition technology should be applied and developed to resolve the problem in observation and surveying process on more effective geo objects with standardization and systematization on this.

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