

--Summary of Research and Development Activities--

1) Prototype design of a communication procedure responding to the user's needs

We are currently working on refining the robot system's interaction and communication protocols based on the information support needs of the user, as well as other factors, such as the user's speech patterns. Preliminary design and implementation of input applications that can be customized by the user are also under way.

2) Decision of the voice and investigation of vocal tuning

We are working on experimentally determining a voice for the robot system that is easy to hear and understand for those with mild hearing difficulties, such as the elderly. Additionally, we are investigating the necessity of allowing the voice to be tuned by the user.

3) Improvement of the robot system's voice recognition of the speech of elderly people

We are collecting data on speech patterns for eventual use in developing recognition and learning techniques for the robot system that will allow it to robustly extract a voice signal from the speech of an elderly person talking to it. Additionally, in regard to subword code strings that are obtained by voice recognition of speech data that includes variations and errors, research is being conducted on a method that can label speech intent, and then perform similarity calculations on a list of code strings, possibly with variations. Future directions of research and development will be influenced by the optimization of this method with respect to obtained speech data, and the subsequent evaluation of its effectiveness and validity based on its practicality.

4) Investigation of the robot system's ability to relay information

We plan to investigate the ability of the robot system to relay information by conducting a field test, using the prototype model, on 10 group residences for the elderly with three groups of test subjects: those with mild forms of cognitive impairment; those with decreased cognitive ability (but not impairment); and those who are otherwise healthy but display behaviour such as forgetfulness, etc.

5) Concretization of the practical features of the robot system and marketing research

We will attempt to make final the desired features of the robot system by holding workshops and information seminars aimed at the elderly, at employees of care facilities for the elderly, and at robotics developers, as well as forming consensus among our

stakeholders. In addition, we plan to create a business model based on marketing research that includes comprehensive pricing, human support services related to introduction of the robot system to the market, and market surveys of the anticipated impact.