Summary of VBL Research Project

Theme	Software development for forest disaster using 3D laser data
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Laser 3D technology has been used to provide a critical 3D map for automated construction system called i-Construction and automated vehicle driving system. The 3D laser data became a powerful data source to support high precision industry. For the environmental application, it has been used to measure biomass without any destructive sampling of trees. However, the free and commercial software is limited to produce accurate result from the high precision 3D data. Even the high definition data captures the detail shape, the conventional software only fit a simple shape like a circle and loses the measurement accuracy. It produced more errors when it is applied to more irregular shape of stems. This study uses the most accurate algorithm which I developed from neural network techniques. The technique was patented through Chiba University. And the technique was successfully implemented to big projects with forestry leading companies before. The algorithm is included to the software package sold through this project. This software development is the venture business initiated from Chiba University. The main application of this software is forest disaster which becomes a worldwide problem. The software is expected to measure the data faster and more accurate. We will collect user feedback from experts to make the most user-friendly interface. Now my research team owns the high-end terrestrial laser sensor to take high quality data. A service wi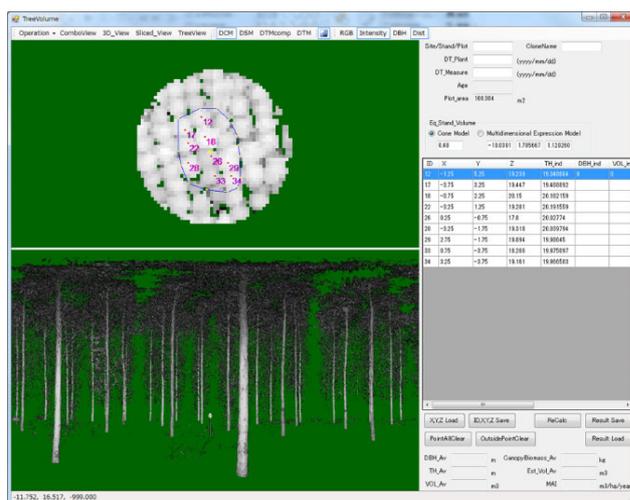ll be available to sell the software with the good quality 3D data acquisition to grow and develop this business. This service enables us to become a top software seller in the environmental 3D market. The software aims for three key purposes; most accurate, fully automatic, and good extension. The good extension includes deep learning functionality as an optional tool for further development to catch up the strong need of market. I hope this software contributes to help the social problems caused by forest fire.

Fig. the software sample which is created for the past project