

J.LEE, C-W. KIM, H.SON, C-M. KIM. **Automated pipeline extraction for modeling from laser-scanned data.** *Gerontechnology* 2012;11(2):90; doi:10.4017/gt.2012.11.02.450.00 **Purpose** Three-dimensional (3D) as-built plant models are required for various purposes, such as plant operation, maintenance, and the expansion of existing facilities. The as-built plant model reconstruction process consists of as-built plant measurement and 3D plant model reconstruction. As-built plant measurement uses 3D laser scanning technology to efficiently acquire data. However, the current method used for 3D as-built plant model reconstruction from laser-scanned data is still labor-intensive. The objective of this study is to develop a fully-automated parametric reconstruction of the as-built pipe-line occupying a large portion of the area in an as-built plant.

**Method** The proposed approach consists of three main steps. The first step is to extract the cylindrically-formed pipelines from laser-scanned data based on random sampling consensus (RANSAC). The second step is to segment the extracted pipelines into pipe components, such as straight pipe, elbow, and branch tee, based on medial axis extraction and curve skeletonization. The last step is to surface-model reconstruct the segmented pipe-lines using the parametric modeling method. **Results & Discussion** The experiment was performed at an operating plant to validate the proposed method. The experimental results revealed that the proposed method could contribute to automation for 3D as-built plant model reconstruction.

**Keywords:** automation, as-built modeling, as-built pipe, parametric modeling, RANSAC

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