

## Automatic Transformation of Road Marking Data into Lane-level Ribbon Network for Navigation

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### Abstract

Accurate and high detailed lane-level navigation map is essential for autonomous vehicle navigation system. Processing is required to transform road marking data into navigable map. In this paper, a novel two-step method is proposed to automatically generate lane-level navigation map from road marking data. Road surface is segmented into navigable polygon-based network, which comprises *Lane Functional Polygon (LFP)* and *Virtual Lane Polygon (VLP)*. The method first create *LFPs* from longitudinal road markings. In the second step, *VLPs*, connectors of *LFPs* at junction area, are formulated with cubic Bézier Curves. *LFPs* and *VLPs* are then interconnected to form the lane-level navigation map. This method demonstrates robustness and efficiency in the experiments using Intelligent Road Network Packages (IRNP) provided by Transport Department of Hong Kong.

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