The Novel Real-Time Sidewalk Direction Recognition Algorithm for Visually Impaired

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Visually impaired people have been suffering to live in dense urban. In particular, knowing the direction of the sidewalk for visually impaired people is not so much easy. There are Braille blocks to guide the direction, however you know that installation of braille block is very low and it just particularly exist in public indoor. Also there are some devices which navigate the visually impaired using GPS, but it can’t assist them in indoor. To solve these problems, we start this project. The goal of this project is to inform the direction of the sidewalk to visually impaired in indoor environment. To reach our goal, we propose the novel computer vision algorithms which can recognize the direction of sidewalk in real time. Pattern recognition based algorithm classifies the pattern of corner into 6 category (Right Vertical Corner, Left Rounded Corner etc). Linear regression based algorithm recognizes the degree of sidewalk direction. To determine the final direction of sidewalk, we cross evaluate the results of both algorithms. Using our algorithms, we could develop mobile walking assistance application that could inform direction of the sidewalk to visually impaired people whether indoor or outdoor.

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