Obstacle Detection on Railway Track by Image Sensor

Masato UKAI BogdanTomoyuki NASSU Nozomi NAGAMINE

In image recognition techniques, firstly, we have reported a new approach for rail extraction by automatic learning of rail patterns for the region adjacent to the camera, using videos captured under real operation conditions, and shown the proposed approach is feasible. Secondly, we have reported on the examination of an image processing method using a complementary combination of all-weather rail detection and multiple recognition modules to improve obstacle recognition performance. To allow for monitoring in large distances, we manufactured a prototype for an onboard pan/tilt camera platform with directional control as required in a railway situation. Thirdly, we have evaluated detection performance through experiments using simulated obstacles, and also examined a parallel processing method for real-time processing. Finally, we have examined a method for sensor integration because a high level of detection performance is expectable by combining a radar sensor and an optical image sensor in a complementary way.