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Kalman filter based GPS/Odometer positioning system for autonomous ground vehicles

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Navigation is one of the most critical tasks for autonomous mobile robot. Accurate localization of the robot is crucial for navigation. The non-holmic nature of wheeled robot and kinematic model robot results in the measurement noise. Noise in the measurement system introduces error and inaccuracy in the decision making of the navigation system. Research is being carried out with the accuracy of the robot pose and orientation. Kalman filter is being used to remove the noise in the measurement for accurate localization. This research work made an attempt to propose the method to correct the corrupted robot heading using Kalman filter for surveillance based mobile robot. The Kalman filter is used for prediction and correction of the robot heading data obtained from the odometry sensors of the vehicle.

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