Research article

Assessment of particle filter and Kalman filter for estimating velocity using odometery system

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Abstract

Purpose – The purpose of this paper is to propose multisensory integration for train positioning application, to support recent automatic train control systems and also moving block signaling systems.

Design/methodology/approach – Reducing the cost and at the same time improving the reliability and accuracy of the overall positioning system, are primary goals of the researches going on in this field.

Findings – This paper designs and evaluates two different algorithms of Kalman filtering (KF) and particle filtering (PF), on a set of low cost positioning systems, as tachometers, Doppler radar and balises.

Originality/value – This paper's research outcomes introduce considerable improvements upon the results when compared to the current utilization of the stand-alone tachometer and Doppler radar sensors, and slight improvements in comparison with the KF algorithm, and also upon results in recent publications on the subject.

Keywords Data analysis, Trains, Railway engineering, Velocity, Programming and algorithm theory, Particle size measurement

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