

CHAPTER 58
TECHNOLOGY
ELECTRONICS AND COMMUNICATION
ENGINEERING

Doctoral Theses

464. RAWAT (Tarun Kumar)
Stochastic Nonlinear filtering Theory Applied to a Class of Engineering Problems.
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Abstract

Deals with the 'Stochastic nonlinear filtering theory applied to a class of engineering problems'. The problems considered include satellite tracking, coordinated-turn motion manoeuvring target tracking, continuous-time least mean square (LMS) weight tracking and convergence analysis of continuous-time nonlinear LMS-type algorithm. The stochastic nonlinear filter that has been employed in various tracking applications is an approximate second-order continuous-discrete nonlinear filter. It also deals with modelling the motion of a satellite and a coordinated-turn motion manoeuvring target (e.g. an aircraft) using stochastic differential equations and then by taking measurements on the position of the target at discrete time instants to obtain filtered estimates of the trajectory.

Contents

1. Introduction. 2. Nonlinear filtering theory. 3. Satellite tracking. 4. Coordinated-turn motion manoeuvring target tracking. 5. LMS-Weight tracking. 6. Stochastic calculus in adaptive filter theory. 7. Conclusions. Bibliography.