

ICTS PhD Seminar

Title : Asymptotic properties of non-linear filters

Speaker : Anugu Sumith Reddy (ICTS-TIFR, Bangalore)

Date : Tuesday, 27th October 2020

Time : 10:00 am (IST)

Abstract : In practice, the state of many systems of interest is accessible only through indirect noisy observations. Stochastic filtering theory deals with estimating the state of the system at a particular instant given some noisy observations of the system up to that instant. It gives the best estimate in the sense of mean square. As it turns out, the state estimation depends on the initial condition of the system, in addition to the observations. Since, in practice, we may not have the knowledge of the initial condition, it is desirable to have the state estimator (filter) behave asymptotically independent of the initial condition. This property is referred to as filter stability. In this talk, we will introduce the formulation of stochastic filtering theory (in the common setting of diffusions) and the problem of filter stability. Most of the results (in this area) prior to this doctoral work, address the problem of filter stability for the case of noisy systems of interest. We will discuss and address the stability problem when the system is deterministic. Since the system is deterministic, we will see that the stability of the filter depends on the characteristics of the dynamics such as the attractor.

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