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Paper Analysis Outline 2

Julier et al. (TAC 2000)

* **What problem is the paper addressing?**
  + This paper addresses the shortcomings of a Kalman filter when applied to nonlinear systems
* **What is the proposed solution?**
  + Using samples to parameterize the mean and covariance of a probability distribution (does not need to be Gaussian). It can be used on linear and non linear systems.
* **What are the assumptions the solution depends on (both explicit and implicit)?**
  + Assumes that higher order Taylor Series terms are negligible (could introduce error or bias)
  + They assume the noise vectors have zero mean (no bias)
  + They assume a lot of Gaussian distributions in data and samples.
* **What is novel about the paper?**
  + This paper provides a new method for using a Kalman filter on non linear systems that is more accurate and easier to implement than an EKF of Gauss second order filter.
* **What are the claims the paper makes?**
  + They claim their method is easier to implement and more accurate than previous methods.
* **Does the evaluation included in the paper validate/verify the claims?**
  + They apply their method to a body reentering the atmosphere. Their method does have significantly reduced error, but in the first 10-20 timesteps they do have more error than the EKF.