Recent works indicate that innovative deployment of sensors in subsurfaces can beneficially support the production of oil and gas. The data which is sensed by such sensors is usually corrupted with noise. Filtering is desirable in such embedded systems in order to smooth out such fluctuations that otherwise would shorten the lifespan of sensors. This contribution
presents a unique application of Kalman filtering technique for processing such sensitive information because sensor readings are usually imprecise due to strong variations in environment and also, computation has to be much more energy efficient than communication. Out of the various filtering algorithms available, we have chosen to apply Kalman filter, primarily because it works well both in theory and practice and moreover, it is able to minimize the variance of estimation error i.e. filters noise from the actual signal more accurately.

Reference

A Novel Application of Extended Kalman Filter for Efficient Information Processing in Subsurfaces

- Pal Skalle, Agnar Aamodt, “Knowledge-Based Decision Support In Oil Well Drilling”, Intelligent Information Processing II: IFIP International Conference on Intelligent Information Processing, pp:443-455

Index Terms

Computer Science   Signal Processing

Key words

Wireless Sensor Networks   Kalman Filtering
Algorithm
Extended Kalman Filter

Information Processing

Estimation Error