



## OUTLIER DETECTION BASED ON SIMILAR FLOCKING MODEL IN WIRELESS SENSOR NETWORKS

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*Submitted: Aug. 4, 2012*

*Accepted: Jan. 15, 2013*

*Published: Feb. 20, 2013*

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*Abstract- Outlier detection plays a crucial role in secure monitoring in Wireless Sensor Networks (WSN). Moreover, outlier detection techniques in WSN face the problem of limited resources of transmission bandwidth, energy consumption and storage capacity. In this paper, similar flocking model is proposed and a cluster algorithm based on similar flocking model (CASFM) is put forward to detect outliers in real-time stream data collected by sensor nodes. The similar flocking model improves the Vicsek model by introducing the similarity between individuals and velocity updating rule, which causes similar objects to cluster quickly. In order to save energy, CASFM*

*algorithm preprocesses similar data on the sending sensors first, which greatly reduces the transmission of similar data. So the communication overhead is decreased. With the characteristics of self-organization and fast convergence of flocking model, stream data can be clustered quickly. The experimental results show that the proposed algorithm can detect outliers effectively with less energy consumption.*

**Index terms:** Wireless sensor network, Outlier detection, Stream clustering, Flocking model.