Fast Recovery Architecture by Selecting Surrogate Master Node (FSMN) in Industrial IoT Environment

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***Abstract*—This paper proposes an architecture that selects a sink node when a CPS is paralyzed. The CPS is a system (master node) with various sensor networks and machine networks that exchanges device information in real-time in the industrial IoT environment. When the CPS cannot perform normally due to internal/external factors, the last log of the master node is analyzed to determine the cause of the paralysis. The CPS select six attributes from the log data and convert them into datasets usable in this architecture. The normal category of the sink node is determined through the K-means clustering algorithm according to the sink node's profiling data. The centroid of the normal category is then determined. The normal category of the sink node is updated in real time until the CPS is paralyzed. When CPS paralysis occurs, the log data of the most recent sink node is applied to the K-means clustering that was formed in advance. We then determine the most available sink node among the sink nodes through the distance using vector value and priority algorithm between the csentral point and the sink node. Therefore, in the case of a failure of the master node, the high-priority surrogate master node can perform the role of the master node so that the data and the system can be maintained even in unexpected situations.**

***Keywords*— Industrial IoT, K-means Clustering, CPS, Fast Recovery Architecture, Priority Algorithm**

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