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**Data-Driven Design of Fog Computing aided Process Monitoring System for Large-Scale Industrial Processes**

**Abstract**

Stimulated by the recent development of fog computing technology, in this paper, a fog computing aided process monitoring and control architecture is proposed for large-scale industrial processes, which enables reliable and efficient online performance optimization in each fog computing node without modifying pre-designed control subsystems. Moreover, a closed-loop data-driven method is developed for the process monitoring system design and an adaptive configuration approach is proposed to deal with the problems caused by the changes of process parameters and operating points. The feasibility and effectiveness of the proposed design approaches are verified and demonstrated through the case study on the Tennessee Eastman (TE) benchmark system.