基于人工免疫网络的连续过程传感器置信度评估

作　者：王斌1，2 赵云1 尹云辉1庄健2 王孙安2

单　位：(1嘉兴学院,嘉兴 314001; 2西安交通大学，西安，710048)

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摘　要：

针对连续过程传感器置信度评估的问题，提出了一种基于人工免疫网络的在线数据处理算法。分析了Ishida动态识别免疫网络，在此基础上设计了模糊测试单元；使用模糊论域表达了动态识别免疫网络中抗体之间刺激的强度，建立了抗体浓度的数学模型，依照抗体的浓度来区分传感器的置信度；设计了模糊测试单元参数确定的方法，用以调整网络灵敏度和平衡的关系。本文算法应用于生物发酵过程传感器置信度评估，实验结果表明该算法能够对传感器的置信度进行有效评估、易于工程实现。

关键词：过程控制,人工免疫网络，传感器

Sensors Confidence Evaluation Using Artificial Immune Network in Continuous Industrial Process

Author's Name: WANG Bin 1 ZHAO Yun 1 YIN Yunhui1 ZHUANG Jian2 WANG Sun-An2

Institution: (1JiaXing University, Jiaxing 314001, China;2 Xi'an Jiaotong University Xi'an,710049, China)

Abstract:

To evaluate sensor confidence in continuous industrial process, an arithmetic based on artificial immune network is proposed. The artificial immune network proposed by ishida is analyzed, and fuzzy test unit of the arithmetic is designed. The fuzzy relationship between sensor data is expressed by antibodies, a concentration model of antibody is built, and sensor confidence could be evaluated by the antibody concentration. the method for setting parameters of fuzzy test unit is designed according to sensitivity and balance of the network. The arithmetic is applied to evaluate sensor confidence of a fermentation process, results show that the arithmetic can solve the problem.

Keywords: Process Control, Artificial Immune Network, Sensor

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