Bayesian-Estimation-Algorithm-Based Gas Detection Modules

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In this study, we develop two types of gas detection module using multiple sensors and applied them to the intelligent building system. Bayesian estimation algorithm is applied in the competitive gas detection module and complementary gas detection module, and the proposed algorithm is implemented for various gas sensor combination methods. In the competitive gas detection module, we use two gas sensors to improve the accuracy of the proposed algorithm. In the complementary gas detection module, we use an NH_3 sensor, an air pollution sensor, an alcohol sensor, a HS sensor, a smoke sensor, a CO sensor, an LPG sensor, and a natural gas sensor. The module classifies various unknown gases using Bayesian estimation algorithm. The controller of the two gas detection modules is a Holtek microchip. The modules can communicate with the supervised computer via a wired series interface or a wireless RF interface and alarm users using the voice module. Finally, we present some experimental results to measure known and unknown gases using the two gas detection modules.

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