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Pattern Recognition applied in Alcohol and LPG Fuel

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Book Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Concepts and Methods. Application of Artificial Neural Networks and Fuzzy Inference System. | This work shows the results of a robust system developed as an alternative to recognize the quality of alcohol vapor and Liquid Petrol Gas (LPG) heat power in an electric nose. Two methodologies were used to recognize alcohol vapor and LPG patterns. The first approach used a Fuzzy Inference System (FIS) and training algorithms of Artificial Neural Networks (ANN):

Backpropagation and Learning Vector Quantization. The second approach consists of develop an LPG heat power recognizing system robust to one-random-sensor-loss. Three systems were used. The first implemented an ANN to recognize data that simulated the failure of a random sensor. This system had 97% of right responses. The second implemented seven ANN s trained with input data subsets, such that six ANN s were trained with a different failure sensor, and the seventh ANN was trained with data of all sensors without failure. This system had 99% of right responses. The third implemented an Ensemble Static Learning Machine with ten parallel ANN s. The results were 97% of right responses. Some ways for hardware implementation of the recognizing system...



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