

Development of human sensory mimicking system

Abstract

Taste (gustatory) and smell (olfactory) are two of the five human senses apart from touch (somatosensory), vision and hearing (auditory). In human and many other vertebrate animals the sense of taste are often used with the sense of smell, and perceived by the brain as flavour. There have been a few attempts in combining the responses of different types of electronic sensory systems, and these are performed using data fusion. However, the fusion is based on separate systems. Presented here is the development of a hybrid system combining an electronic nose and tongue. Both sub-systems were developed using off-the-shelf components and rapid prototyping techniques. Both sub-systems consist of an array of gas sensors and taste sensors with different selectivity patterns, a signal-collecting unit and pattern recognition software applied to a computer. The principle is based on the fact that a large number of different compounds contribute to defining a measured smell and liquid samples; the sensor array of provide an output pattern that represents a combination of all the components. The system uses qualitative analysis which as same as human sensory system. The initial tests on differentiating four types of teas have shown that multiple-modality systems perform better than those with single modality.