Digital improvements of e-nose for auto scanning and analysis of matter, storing, updating & retrieved inputs from database

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Abstract - Current diagnostics are based on biochemical or microbiological methods. These methods are operator dependent, time-consuming, expensive, and require special skills, and are therefore, not suitable for point-of-care testing. Recent developments of sensing technology and pattern recognition methods make electronic nose technology an interesting alternative for medical point-of-care devices. Electronic noses have broadly used by a diversity of marketable industries, together with the scientific research, agro division, , food preservation, biomedical, cosmetics, environmental safety, security, manufacturing, military, pharmaceutical, and a variety of fields. The improved sensing device sense and analyse the matter using different objectives and declared accurate output, e-nose used by all phases of trading and life system. This paper provides a versatile approach for scanning and analysis of matter as sell as auto updating of database.

Keywords — digital e-nose, automatic learning, Pattern recognition, database

I. INTRODUCTION

1.1 What is digital/e-nose?

Digital nose is a complex set of different sensors that can touch or feel the matter, analyse and declared the result that can automate the system cycle. Different parameters are responsible for the desired outputs. Electronic noses have been around for several years but have typically been large and expensive. Current research is focused on making the devices smaller, less expensive, and more sensitive. The smallest version, a nose-on-a-chip is a single computer chip containing both the sensors and the processing components.

An odour is composed of molecules, each of which has a specific size and shape. Each of these molecules has a correspondingly sized and shaped receptor in the human nose. When a specific receptor receives a molecule, it sends a signal to the brain and the brain identifies the smell associated with that particular molecule. Electronic noses based on the biological model work in a similar manner, albeit substituting sensors for the receptors, and transmitting the signal to a program for processing, rather than to the brain.

Electronic noses are one example of a growing research area called biomimicry, which involves human-made applications patterned on natural phenomena. Electronic noses were originally used for quality control applications in the food, beverage and cosmetics industries. Current applications include detection of odors specific to diseases for medical diagnosis, and detection of pollutants and gas leaks for environmental protection.

1.2 benefit of digital nose technology:

1.2.1 chemical appliance
1.2.2 Food Processing & preserving
1.2.3 Medical diagnostic and treatment
1.2.4 Multimedia and entertainment
1.2.5 Education and learning
1.2.6 Safety and Security
1.2.7 crime prevention

1.2.8 coal & other mining

1.3 Complex with e-nose and database

- Update the database and reproduce actual pattern & result
- Abstract output is based on current input with existing database
- Classification and compression of matter
- Diagnose the matter is solid, liquid of other based on different sensors.
- Test the matter based on condition.
- Standardized scan and pattern recognition
- Compare and differentiate the matter with existing database

II. TOPIC APPROACH

The topic approach is based following major steps:

1. Primary sensing objectives
2. Scan and collect observed data
3. Create Pattern and primary result
4. Match with existing data /update data
5. Final result

2.1 Primary sensing objectives

An array of complex set of electronic sensors sense the matter on respective objectives

- Identify the matter solid, liquid, gas or other
- Colour of the matter
- Humidity
- Light reflection
- Source sound
- Reflection of sound
- Surface image
- Voltage parameter
- Surface tension
- Depth time
- Depth level
- Number of molecules
- Density of molecules
- Pattern of molecules
- Smell of the matter

2.2 Scan and collect observed data

Different sensor work on the matter and observed the data based on different objectives and create different patterns and information

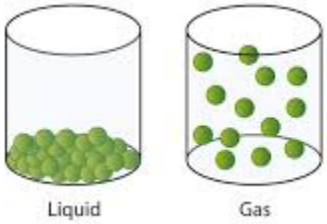


Fig.1 primary object observation

23.3 Create Pattern and primary result

After scanned by different sensor on different objectives the sensor forward data to next device for pattern creating and matching

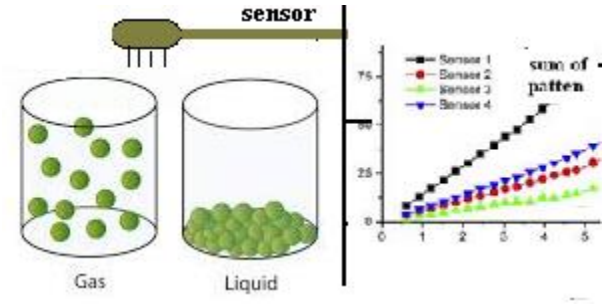


Fig.2 create pattern and save as a file

2.4 Math with existing data / update data

To declare the exact result the primary data are matched with the existing database it may be possible that the observed data are not in the database in this case a new record is maintain by the database.

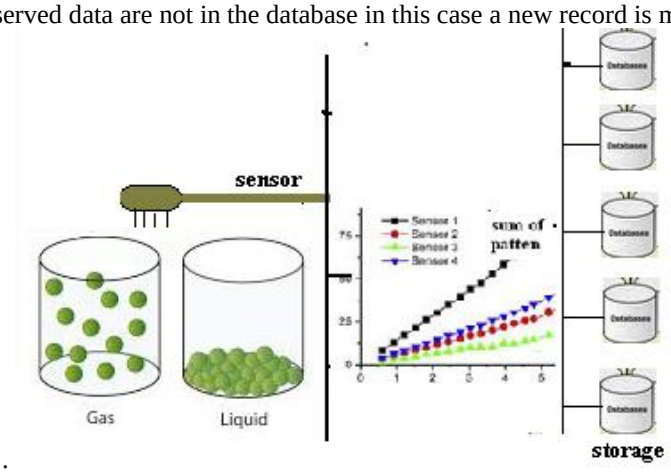
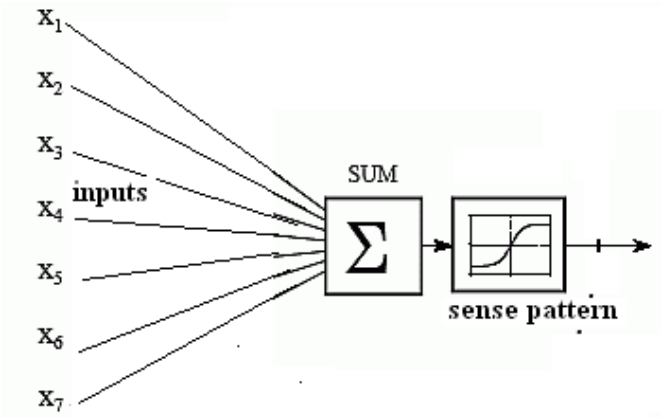


Fig.3 pattern matching / database

1.5 final result

the final abstract based on the inclusion of all current and existing database. The neural network is the based solution.



III. CONCLUSION

Application of e-nose is not a simple task we have to compose different parameters but it is a fast and accurate approach for instant diagnoses the compound. The complex array of sensor may add other sensing objectives for making more sensitive observation and result

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