Sensor Technology & Applications

Sensor Technology & Applications is a research group that conducts high quality research on fabrication of chemical and biosensor intelligent devices. This group encompasses more than one discipline which are Front-end sensor development, Embedded processing and Signal acquisition and Pattern Classification / Recognition. Spearheaded by Prof Dr Mohd Noor Ahmad, who is responsible for Front-end sensor fabrication, this cluster has Prof Dr Ali Yeon Md Shakaff (Embedded processing & Signal acquisition) and Assoc Prof Abd Hamid Adom (Pattern Classification/Recognition) as research leaders.

The objectives of this cluster, in line with KUKUM's vision to becoming a reputable academic institution, are :

- To attract researchers in the field
- To build up national and international co-operation with industry and fellow institutes
- To lead in the sensor technology and applications area
- To enhances publication output in terms of refereed journal articles
- To realized sizeable spin-off activities

Research Interest Areas

- Electronics - MEMS, NEMS, RF devices
- Enviromental - Wireless sensor networks, Bio and Chem sensors
- Nano Biotechnology - Bio Sensors, Array, Bio Molecular Analysis
- Materials - Nano particles, Self Assembly
- Biomimicking sensors - Taste sensor, smell sensor
- Aquaculture - Water quality
- Bioremediation - Wastewater treatment using microbial / bacteria
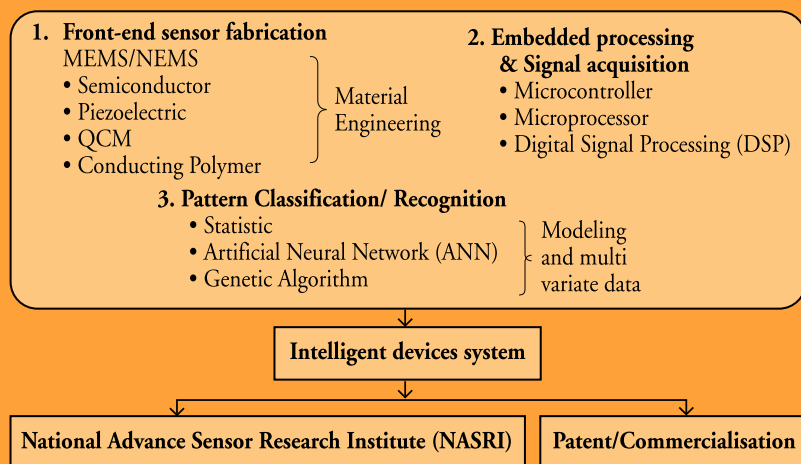- Bacterial Sensor Technology - Detection & identification of bacteria

Research Output

Current Projects
- Biomimicking sensor for herbal quality assurance (QA) / quality control (QC)
- Water quality monitoring for aqua-culture
- Electronic nose for fruit ripeness and volatile organic compounds (VOCs)
- Early detection of Ganoderma in oil palm plantation
- Bioremediation
- Detection of bacteria

Future Projects
- Mimicking sensors for Halal and Haram products
- Odor sensor for air quality index
- Palm oil quality control (QC)

Roadmap & Direction of Cluster

1. **Front-end sensor fabrication**
   MEMS/NEMS
   - Semiconductor
   - Piezoelectric
   - QCM
   - Conducting Polymer

   Material Engineering

2. **Embedded processing & Signal acquisition**
   - Microcontroller
   - Microprocessor
   - Digital Signal Processing (DSP)

3. **Pattern Classification/ Recognition**
   - Statistic
   - Artificial Neural Network (ANN)
   - Genetic Algorithm

   Modeling and multi variate data

Intelligent devices system

National Advance Sensor Research Institute (NASRI)

Patent/Commercialisation

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