

Application of our instruments

So far I have mentioned only some instruments that have been designed. Those who are related with such profession may realize that these techniques and tools may be used in different areas starting from education/training programmes, initiate different business and also to extend the existing business. I have also tried to extend and incorporate different techniques to update the recent technology as far as possible. Initially I have started with some sensors with low level dc output. We also used analog technique to process this signal. Next we have used digital technique and also microprocessor and computer for signal processing. By using DSP and Microcontroller these technique may be updated. At recent time wireless sensors are available and also the wire less net work system is quite matured. I also use technique to use these wireless sensors and network to measure and control from remote distance to cover different smart sensors and smart environment.

Basically our instruments covers the following areas.

1. Different measurements instruments by using different sensors. By adjusting suitable sensors and calibration these may be used. One can measure the following parameters.

Measurand	Sensor Principle
Physical properties	
Tempertaure	Thermistor, thermo-mechanical, thermocouple
Pressure	Piezoresistive, capacitive
Humidity	Resistive, capacitive
Flow	Pressure change, thermistor
Motion Properties	
Position	contact sensor
Velocity	Doppler, Hall effect, optoelectronic
Acceleration	Piezoresistive, piezoelectric, optical fiber
Force	Piezoelectric, piezoresistive
Torque	Piezoresistive, optoelectronic
Vibration	Piezoresistive, piezoelectric, optical fiber, Sound, ultrasound
Presence	
Proximity	Contact switch, capacitive
Distance/range	IR, acoustic
Biochemical agents	Biochemical transduction
Identification	
Personal features	Fingerprints, retinal scan, voice, heat plume, vision motion analysis
GAS Detection	
Different gas sensors	

2. Control of instruments : so far we have used only ON-OFF and PI type control algorithm. Generally we use software for the controlling.

3. Wireless measurement from Remote distance : since as mentioned there are many wireless sensors are available we also recommend for wireless measurement system from remote distance. Recently these types of instrumentation has tremendous potential. For automatic security system of different building or restricted area, to monitor agricultural land, animal and for pollution control and weather measurement system these are very important.

4. Automation by using robotic action: some areas where human approach is not possible these application may be useful. Also some work which are monotonous for human being may be executed by some automatic action.

5. Sharing of different memory based devices : Recently there are many gadgets where memory is used starting from TV, sound system, desktop, laptop, mobile, tap etc. One can save sufficient money, time and space by properly sharing of these items.

I hope one can understand some idea of our designs. Instead of electronic parts I have a inclination to use some mechanical components in our design so that people can understand the design. I will prefer to use a mechanical switch instead of using a electronic switch if it is possible.

I will update this file again in course of time.

In the concluding section I like to mention to whom these designs will be useful immediately. AS mentioned at the beginning, some ideas are being reflected here.

- i. For different educational purpose. It is my observation due to high specialisation some times our student do not follow the spirit of the instrumentation. This will help them to correlate some ideas of instrumentation.
- ii. Small business may be set up.
- iii. Existing business may be extended to include some features from the recent technology. It is my expectation there is really not much scope without introducing new concepts in there business.
- iv. Different persons may participate according the need. For example to act as financiers of the business, marketing agency, share holder etc. I hope there are expert persons to continue this discussion.