



PhD Project

Project Details	
Project Title	Artificial Neural Network (ANN) Based Prediction System Integrated with SENSurAIR® PM2.5 Sensor
Project Summary	<p>1. Fabrication of 5 prototypes of the SENSurAIR PM2.5 Sensor based on bright-field imaging principle for field deployment and testing.</p> <p>2. Field calibration of the SENSurAIR PM2.5 sensors at the selected location along with on-the-go data correction algorithm development for the real-time data correction for temperature and humidity. The calibrated data will be provided for future mass deployment.</p> <p>3. ANN Based PM2.5 prediction model for predicting PM2.5 concentration.</p> <p>4. SENSurAIR PM2.5 sensor data will be communicated wirelessly on the cloud using the wireless network algorithm as developed in the UAY project¹.</p> <p><small>¹ Indian Institute of Technology, Delhi and Indian Institute of Technology, Madras (2020). <i>Low Cost Semiconductor and Optical Sensors based Urban Air Quality Monitoring Network System (SENSurAIR®)</i>. Uchatar Avishkar Yojna (UAY) jointly funded by Ministry of Education (Formerly MHRD), SERB-DST and Envirotech Instrument Pvt. Ltd. (Industrial Partner).</small></p>

PhD Supervisors			
Role	Faculty	Academic Unit in IITD	Email ID
Supervisor 1	Prof. Dalip Singh Mehta	Department of Physics	mehtads@physics.iitd.ac.in
Supervisor 2	Prof. Mukesh Khare	Department of Civil Engineering	mukeshk@civil.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)
<ul style="list-style-type: none"> B. Tech. (with GATE qualification) / M. Sc.(with NET/SET qualification) / M.C.A. (with GATE qualification) 1st class or equivalent in the appropriate discipline. The candidate should have at least 2-year working experience in the area of sensor-based Air quality monitoring network system design and application.

Source of funding (IRD/FITT Project details, if any)
IRD through CPCB – EPC Funds or Institute Fellowship

Role of Faculty Members involved:

1. Prof. D.S. Mehta will be responsible for:
 - a. Fabrication of Prototypes SENSurAIR PM2.5 Sensors.
 - b. Development of the ANN algorithm for the prediction of PM2.5.
 - c. Integration of wireless network algorithm with fabricated sensor for the wireless communication of PM2.5 Sensor data.
2. Prof. Mukesh Khare will be responsible for:
 - a. Field Deployment and testing of fabricated sensor.
 - b. Development of on-the-go calibration algorithm.
 - c. Training and validation of ANN algorithm.