



PhD Project

Project Details

Project Title	Modelling personal exposure to air pollution in Delhi NCR
Project Summary	Assessment of personal exposure to ambient air pollution is critical to improve estimates of health impacts. PM _{2.5} concentration changes rapidly spatially due to environmental conditions and local source characteristics. A limited number of stationary monitors is not adequate to quantify such heterogeneity in PM _{2.5} concentration and since the location of a person is not static, estimating exposure based on a limited stationary point is challenging. Satellites provide spatial heterogeneity, but the best spatial resolution achieved is 1-km. Mobile monitoring of air pollution using portable sensors is the missing link in the puzzle. In this work the candidate is expected to carry out measurements using sensors deployed on mobile platform and using portable sensors in various microenvironments in Delhi. The data will be used to develop personal exposure model and improve estimates of exposure in key urban microenvironments (e.g., roadside, residential areas, industrial areas, etc.).

PhD Supervisors

Role	Faculty	Academic Unit in IITD	Email ID
Supervisor 1	Sagnik Dey	Centre for Atmospheric Sciences, IITD	sagnik@cas.iitd.ac.in
Supervisor 2	Rijurekha Sen	Department of Computer Science and Engineering, IITD	Rijurekha.Sen@cse.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)

- MSc or MS(R) with GATE/NET/DST-INSPIRE or MTech in relevant discipline.
- Experience in Python/R/Matlab is desired.
- Some experience in sensor hardware is preferable.

Source of funding (IRD/FITT Project details, if any)

We would prefer candidates with their own fellowships, until the supervisors acquire funding through external source. Otherwise, we will use Institute Fellowship.

Role of Faculty Members involved:

This is a true interdisciplinary project requiring expertise on exposure modelling and data analytics. Prof Dey will supervise the exposure modelling, while Prof Sen will supervise the sensor hardware and software and data analytics of the project. Both the supervisors will be involved in the analysis.