Indian Institute of Technology Delhi

School of Interdisciplinary Research (SIRe)

SIRe

IIT Delhi

SIRe Project Number
2022-01-27

PhD Project

(will be assigned by SIRe)

Project Details	
Project Title	A machine learning approach to understand the effect of climate change and air pollution on malaria in India
Project Summary	Transmission and distribution of malaria is greatly influenced by meteorological parameters like temperature, relative humidity, precipitation etc. Further, the proximity of a water body can also accelerate the spread. While the range of different meteorological parameters which governs the malaria spread is more or less well understood, the zones of malaria endemicity can change in future owing to changing climatic conditions in India due to climate change. Thus, it is imperative to understand the relation between meteorology, land use/land cover and malaria spread in the country using machine learning tools. Furthermore, other factors such as air pollution in a region may play important role either by changing immunity of residents to such vector borne diseases or affecting the behavior of anopheline vectors in urban areas in the country. Overall, the aim of this study is to develop a machine learning for association and predictive modeling of malaria spread in India based on meteorological, land use/land cover and air pollution. Based on the model, the study aims to develop a risk map and an easy to use dashboard that will help authorities to develop efficient resource allocation strategies to control the transmission of malaria.

PhD Supervisors			
Role	**Faculty**	**Academic Unit in IITD**	**Email ID**
Supervisor 1	Dr. Sri Harsha Kota	Department of Civil Engineering	harshakota@iitd.ac.in
Supervisor 2	Dr. Anoopkrishnan Naduvath Mana	Department of Civil Engineering	krishnan@iitd.ac.in
Supervisor 3	Prof. Amit P Sharma	Director ICMR-National Institute of malaria Research and Group Leader, Structural Parasitology International Centre for Genetic Engineering and Biotechnology	directornimr@gmail.com

Project requirements (Student qualifications, experience required, etc)
Candidates with MTech/BTech in Mathematics and Computing and having expertise in machine learning with strong programming skills and prior experience in working with climate and/or air quality data will be preferred.

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

Manpower head in IRD (RP04194G) which is for 3 years (22-11-2021 to 21-11-2024)

Role of Faculty Members involved:

Dr. Sri Harsha Kota is an expert in the field of air quality and climate change, Dr. Anoopkrishnan Naduvath Mana is an expert in the field of machine learning and Dr. Amit P Sharma is an parasitologist and is known for his studies on the disease of malaria. All these faculty are Investigators in the ICMR funded project "A machine learning approach to understand the effect of climate change and air pollution on malaria in India"