



SIMATS ENGINEERING

Saveetha Institute of Medical and Technical Sciences
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Course Code: DSA0613

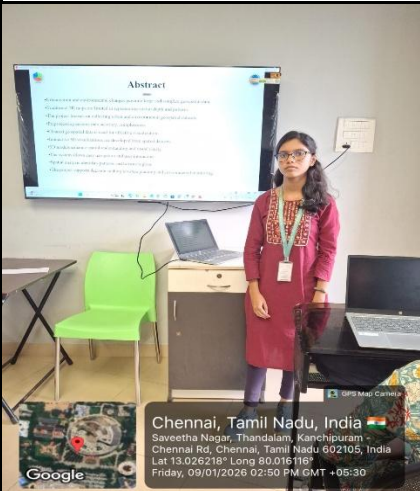
Slot: A

Course Name: Data Handling and Visualization for Data Analytics

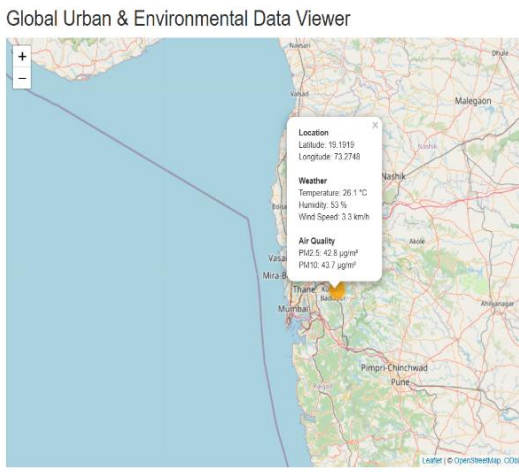
Course Faculty: Dr. Kumaragurubaran T & Dr. Senthilvadivu S

Project Title: 3D Geospatial Visualization for Urban and Environmental Data

Module Photographs:



Global Urban & Environmental Data Viewer



```
1 install.packages(c("shiny", "leaflet", "jsonlite"))
2 library(shiny)
3 library(leaflet)
4 library(jsonlite)
5 get_weather <- function(lat, lon) {
6   url <- paste0(
7     "https://api.open-meteo.com/v1/forecast?",
8     "latitude=", lat,
9     "&longitude=", lon,
10    "&current=temperature_2m,relative_humidity_2m,wind_speed_10m"
11  )
12
13  data <- fromJSON(url)
14  data$current
15 }
16 ui <- fluidPage(
17   titlePanel("Global Urban & Environmental Data Viewer"),
18   leafletOutput("map", height = "600px")
19 )
20
21 server <- function(input, output, session) {
22
23   # Create the global OSM map
24   output$map <- renderLeaflet({
25     leaflet() %>%
```

Project Description:

Collecting and preprocessing geospatial urban and environmental data is a critical step in any spatial analysis or visualization workflow. It involves gathering data from diverse sources such as satellite imagery, aerial surveys, GIS repositories, LiDAR datasets, remote sensing platforms, and environmental monitoring sensors. Because these datasets often vary in format, scale, accuracy, and coordinate systems, preprocessing is necessary to ensure consistency and reliability. Additional tasks such as data integration, layering, and feature extraction help combine multiple datasets into a unified spatial framework. Proper collection and preprocessing ensure high-quality geospatial data, which is essential for accurate 3D visualization, spatial analysis, and effective decision-making in urban planning, environmental monitoring, and sustainable development.

Student Signature

Guide Signature