Mid-Semester Evaluation Assignment

DSA 554 3.0 Spatio-temporal Data Analysis

Total marks: 40 marks

Deadline: 17 March 2024

Question 1: 20 Marks

Find a suitable kriging model to interpolate NO_2 values for the following data sets. You can download the dataset using the gstat package in R. The R-code to obtain data is

```
library(gstat)
library(tidyverse)
no2 <- read_csv(system.file("external/no2.csv",
    package = "gstat"), show_col_types = FALSE)
no2
```

Other resources: https://thiyangt.github.io/spatial-modelling/#/idw---application

Question 2: 20 Marks

Find a suitable kriging model o interpolate zinc concentration in the meuse dataset. Use the following R code to load data

```
library(sp)
library(gstat)
library(sf)

data(meuse)
data(meuse.grid)
```

Instructions

- You can use R or Python to complete the assignment. Those who wish to use Python should first read the data using R, save it as a csv file, and then read the data into Python.
- For each dataset, you should include the followings:
  - Brief description of the methodology
  - Analysis codes, results, and interpretations
  - Conclusions
- If you are using Python, please document your analysis in a Jupyter notebook and submit it via LMS. If you are using R, please document your analysis in a RMarkdown(HTML output) and submit it via LMS.
- The final submission date for the assignment is 17 March 2024. Any submissions received after this date will not be accepted and marked, except for cases of medical or personal emergencies. Students are expected to contact the instructor as soon as possible in case of such an event.
- It is the student's responsibility to ensure that the submission is complete, correct, and accessible to the instructor.

- The instructor reserves the right to penalize any student who fails to adhere to the submission rules or who engages in academic dishonesty.
- Students are encouraged to contact the instructor if they have any questions or concerns about the submission rules or the assignment itself.
- It is the student's responsibility to manage their time effectively to ensure that they have enough time to complete the assignment within the given timeframe. This includes allocating enough time to research, plan, and write the assignment, as well as allowing for unexpected circumstances or delays. It is important for students to plan their workload and prioritize their assignments to ensure that they are able to complete them on time and to the best of their ability.