CO_2 Emission Heatmap for MTC Using Python for GIS

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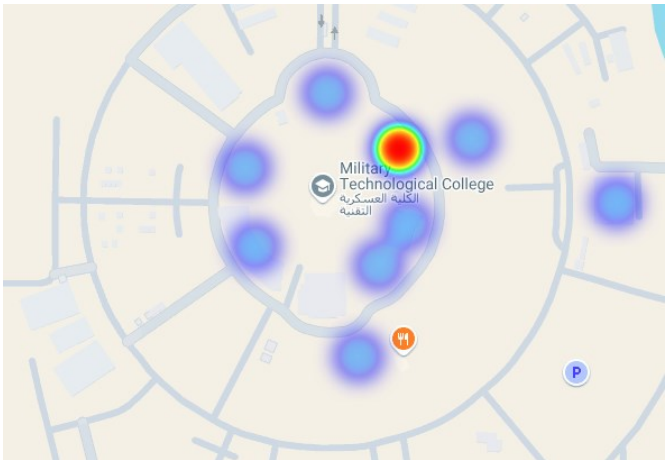
As part of the efforts to ensure a place in the global competitive landscape, Oman is aligning itself with sustainable development through diversified economic measures. To address the United Nations thirteenth Sustainable Development Goal (SDG) which is climate action, the Military Technological College (MTC) management need to understand greenhouse gases released in the production of the paper (CO_2 equivalent) that were printed by all academic and non-academic departments of MTC.

In this research, an attempt is being made to collect the CO_2 emission for Administration and Human Resource department, Admissions and Registration Department, all Engineering departments, Medical Centre, Sports Centre, Foundation Program Department, Examinations Department and Estate and Facilities office and show them on a web map using python programming language.

The data for year 2022 and 2023 is collected in Comma Separated Values (csv) format. For each department, an approximate location in terms of Latitude and Longitude is taken from google maps. Using folium library of python, these locations and CO_2 emission for a particular year is plotted on google map Application Programming Interface (API). The findings reveal that Foundation Program Department's emissions from printing of paper is high when compared to other departments. This result is attributed to high number of students in Foundation Department and the necessity of paper printing for their classwork and assessments. The python program provides an easy way to MTC management to visualise the CO_2 emission heatmap without the need of any proprietary software or Integrated Development Environment and address MTC Dean's vision to encourage all staff and students to reduce the printing of papers.



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