Project Journal

Team KBD

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MSCAI1

Programming for AI

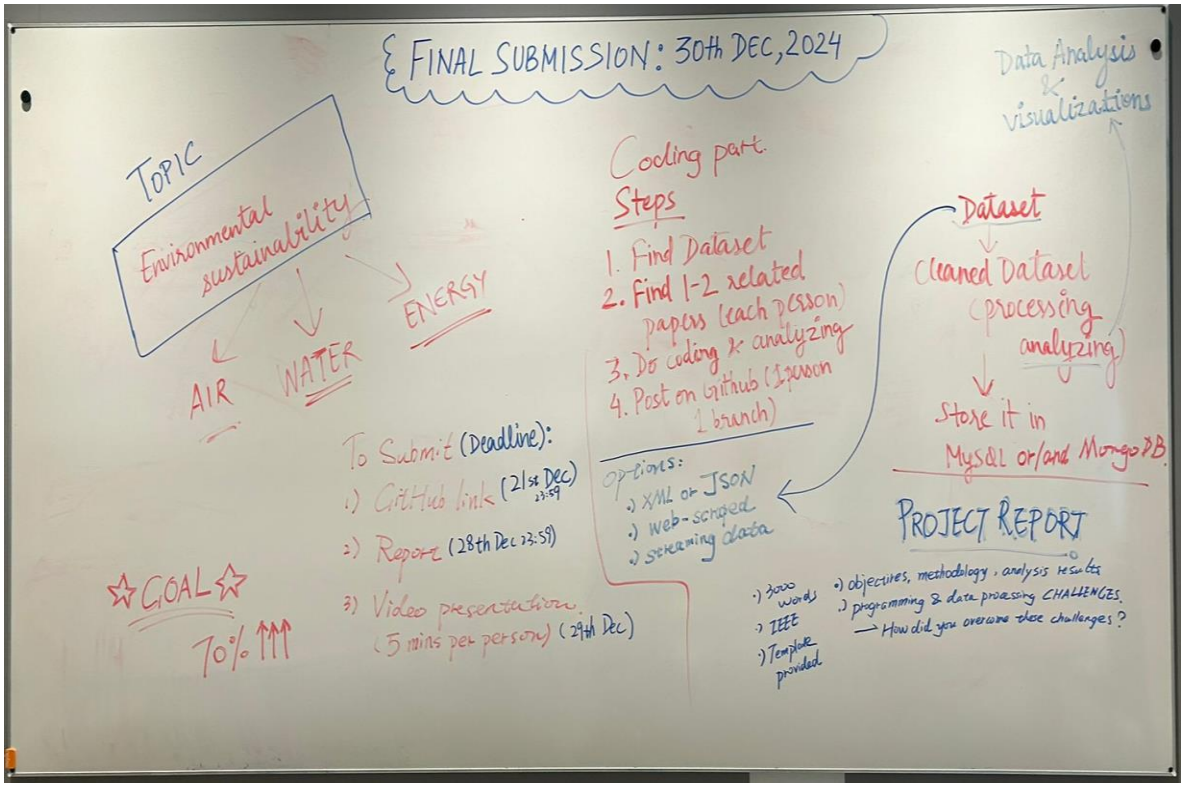
Group Members :-

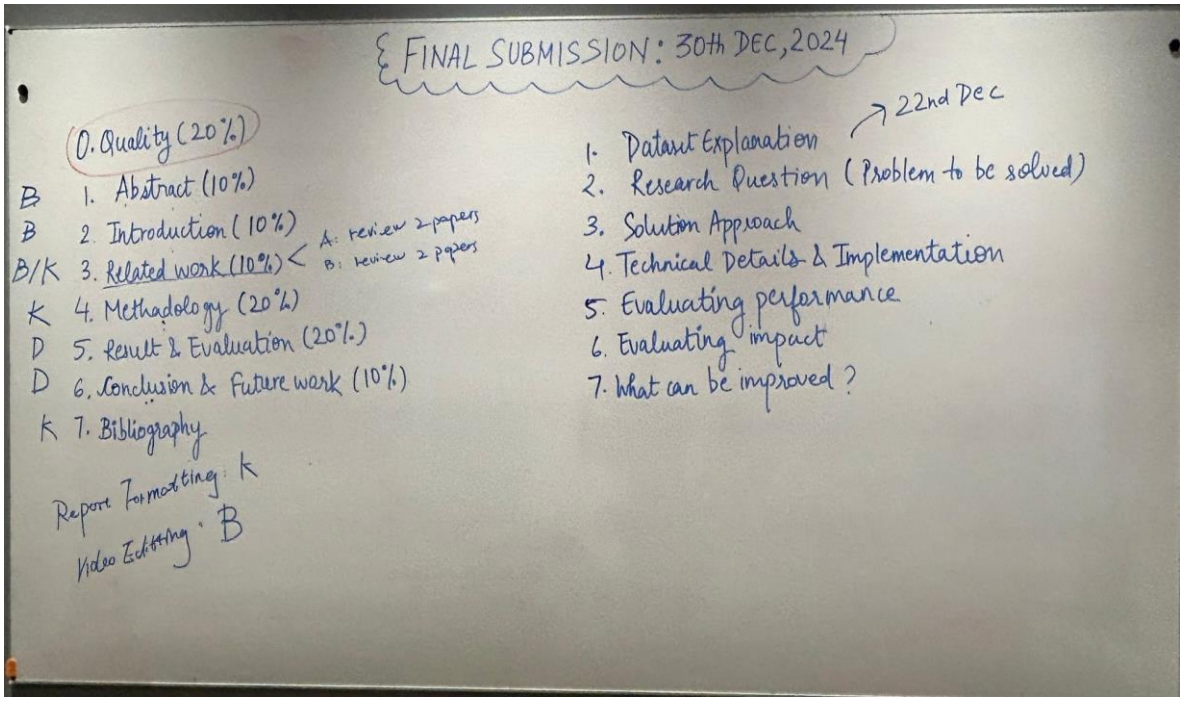
- Bintong Chen
- Dhruva Deswal
- Karandeep Singh Mann

As per the group project my team and I were working on a project for which we divided the work in equal parts so that every member could give there equal input, below is the detailed responsibilities that every member performed and brief description of my work which I performed during this project.

- 10th December' 2024, we selected topic for our group project which is "Data-Driven Sustainability: Tracking Air, Water, and Energy for a Greener Future", It took us 1.5 hrs to finalize this topic among different topics which me discussed. The reason for selecting this topic was because we worked on sustainability in our another module and thought it will be a good topic on which we can work.

- 11th December' 2024, we discussed and distributed the role and responsibilities to every member. It took us 2 hrs to briefly discuss the topic, distributing the task among us , set deadlines to complete the task.





Below are the deadlines and the tasks that every person was assigned to complete as a teamwork :-

1. **<u>Discussion about sub topics of our main topic</u>** :
   - Air (KaranDeep Singh Mann)
   - Water (Dhruva Deswal)
   - Energy (Bintong Chen)
2. **<u>Deadlines to submit the project :</u>**
   - GitHub Link (21st December' 2024)
   - Report (28th December' 2024)
   - Video Presentation (29th December' 2024)
   - Final Submission (30th December' 2024)
3. **<u>Coding Part :</u>**
   - Find Dataset
     a. Data Analysis and Visualization
     b. Store it in MySql or Mongo DB
   - Find 1-2 related papers (Each Person)
   - Do Analysis and Visualization
   - Post code on GitHub (1 Person, 1 Branch)
4. **<u>Project Report Water Part:</u>**
   - Abstract
   - Introduction
   - Related Work
   - Methodology
   - Result and Evaluation
   - Conclusion and Future Work
5. **<u>Project Report Group Part:</u>**
   - Abstract (Bintong Chen)
   - Introduction (Bintong Chen)

- Related Work (Bintong Chen & Karan Deep Singh Maan)
- Methodology (Karandeep Singh Mann)
- Result and Evaluation (Dhruva Deswal)
- Conclusion and Future Work (Dhruva Deswal)
- Bibliography (Karan Deep Singh Maan)
- Report Formatting (Karan Deep Singh Maan)
- Video Editing (Bintong Chen)

- **12th December' 2024 :-**
  I started my work by finding the dataset and relevant research paper for 'Water part' which was assigned to me. It took me 3 days to select a dataset and relevant research paper which suits our project among different datasets. The dataset I choose for the water part was publicly available and is based on Boston water quality data with all the relevant fields for predicting water quality i.e, PH, Dissolved Oxygen, Water Depth, Water Temperature, etc. The dataset is publicly available on "https://catalog.data.gov/dataset/water-quality-data-41c5e/resource/c013c8da-49d3-4898-93a5-f6c0f0e95a0d" and the research paper is available on "https://arxiv.org/pdf/2311.12736". For finding the research papers and dataset I searched on different websites including Google Scholar and Kaggle.

- **16th December' 2024 :-**
  The next process was to perform analysis and visualization on the data to predict the water quality, to perform analysis and visualization different steps were performed for analyzing i.e. dealing with missing value, dealing with categorical data, dealing with outliers and at the end visualization is performed using different visualization techniques. After analysis and visualization the data was then stored into MySQL or Mongo DB. Which took me 6 days for completing the code part as i was facing some difficulties with storing the data at the MySQL after the analysis and visualization I used 3 machine learning algorithms i.e., Random Forest, Linear Regression and Decision Tree with which I get to know that Random Forest is the best Machine Learning Algorithm for predicting water quality for future. I uploaded the code to GitHub on 21st December' 2024.

- **22th December' 2024 :-**
  After analysis the next I started to work on the report part including my report and the final report part which was assigned to me. It took me 5 days to complete my part of the report. My work was to compile "Result and Evaluation" & " Conclusion and Future Work" for all three sub topics of our project, as per the deadlines the report was completed on 28th December' 2024.

- **28th December' 2024 :-**
  I started my video presentation which took me 2 days for completion as the video was end to other team member for compilation and the final video presentation was formed on 30th December.