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|  | **Title : Interactive Dashboard for Data Visualization and  Prediction using Deep Learning** | | **FF No. 180** |  |
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| **Department: Computer Science** | | **Academic Year:2023-24** | | | |
| **Semester : 8th Semester** | | **Group No. : G10** | | | |
| **Project Title: Interactive Dashboard for Data Visualization and Prediction using Deep Learning** | | | | | |
| **Project Area: Data Science** | | | | | |
| **Group Members Details:** | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Sr. No. | Class & Div. | Roll No. | G.R.No. | Name of Student | Contact No. | Email ID |
| 1 | CS-B | 101 | 12011356 | Soureesh Dalal | 7709412217 | soureesh.dalal20@vit.edu |
| 2 | CS-A | 31 | 12010366 | Ashutosh Gore | 93700 23811 | ashutosh.gore20@vit.edu |
| 3 | CS-A | 54 | 12120013 | Rahul Nagpure | 9762734720 | rahul.nagpure21@vit.edu |
| 4 | CS-A | 21 | 12120265 | Deepak Gavit | 9960104943 | deepak.gavit21@vit.edu |

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| Name of Internal Guide: Prof. Anant Kaulage Contact No. & Email ID: anant.kaulage@vit.edu |

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| Project approved / Not approved  **Guide Project Coordinator Head of Department** |

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**Project Synopsis :** **FF No** **180**

This project aims to develop an interactive dashboard that combines advanced data visualization techniques with predictive analytics using deep learning models. The goal is to create a user-friendly platform that allows users to explore, analyze, and make predictions based on complex datasets.

Key Features:

* Data Integration and Analysis :The dashboard will support the integration of diverse datasets from various sources, allowing users to consolidate and analyze information efficiently.
* Interactive Visualization:Leverage powerful visualization libraries like D3.js, Plotly, Streamlit or Matplotlib for creating interactive charts, graphs, and maps. Implement features such as zooming, filtering, and dynamic updates to enhance user interaction. Utilize responsive design principles to ensure compatibility across different devices.
* User-Friendly Interface:Employ a user-centered design approach, conducting usability testing and gathering feedback during the development process. Use intuitive navigation, clear labeling, and contextual help features. Implement responsive design principles for a consistent experience across devices.
* Predictive Analytics:  
  The implementation of predictive analytics with deep learning involves selecting suitable algorithms like Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM), or Gated Recurrent Unit (GRU) based on the nature of the data. Preprocessing steps include normalization, handling missing data, and feature engineering, incorporating temporal features and embedding layers. The training phase comprises designing the neural network architecture, defining loss functions, and tuning hyperparameters. Model validation and evaluation involve cross-validation and selecting appropriate metrics. Ensuring model interpretability can be achieved through techniques like SHAP values and attention mechanisms. Deployment strategies encompass containerization and RESTful API integration, with continuous monitoring and regular retraining for model upkeep. This comprehensive approach ensures the integration of powerful predictive capabilities into the interactive dashboard, enabling users to make informed decisions based on accurate predictions.
* Scalability:The architecture will be designed to handle large datasets, ensuring scalability and performance as users interact with and analyze increasing volumes of data.

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**FF No** **180**

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| Group No. | G10 | | |
| Activity | Review Schedule | Progress Review Report submitted | Signature of Guide |
| Review 1 | Mid Sem. Semester | Yes / No |  |
| Review 2 | End of Semester | Yes / No |  |

Format of Progress Review Report:

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| **Review No.: 1 Group No.: Date:** |
| **Progress Review Report** |
| **Signature of Guide:** |

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| **Review No.: 2 Group No.: Date:** |
| **Progress Review Report** |
| **Signature of Guide:** |