Student Performance Predictor & Visualizer

Predict student performance and visualize insights using machine learning! This project uses a clean and interactive UI built with **Flask**, and powerful tools like **scikit-learn**, **pandas**, and **matplotlib** for backend processing and visualization.

Features

- Predict student grades based on input features
- Visualize study hours vs scores, parental education, and more
- Upload dataset and perform real-time predictions
- Interactive dashboard with clear visualizations

Tech Stack

- **Frontend**: HTML5, CSS3 (Jinja templating via Flask)
- **Backend**: Python, Flask
- **Libraries**:
  - `scikit-learn` for ML model
  - `pandas` for data manipulation
  - `matplotlib` for plotting
  - `joblib` for model persistence

How to Run the Project

1. **Clone the Repository** `bash git clone https://github.com/yourusername/student-performance-predictor.git cd student-performance-predictor`

2. **Create Virtual Environment** `bash python -m venv venv source venv/bin/activate # On Windows: venv\Scripts\activate`

3. **Install Dependencies** `bash pip install -r requirements.txt`

4. **Run the App** `bash python app.py`

5. **Visit in Browser** `http://127.0.0.1:5000`

Screenshots

| Input Form | Prediction Result | Visualizations |
|---|---|---| | Form | Result | Plot |

Folder Structure

```
student-performance-predictor/ ├── static/ │ └── img/ ├── templates/ │ ├── index.html │ └── result.html ├── app.py ├── model.pkl ├── requirements.txt └── README.md
```

Future Enhancements

- Add multiple model support and model comparison
- Use Streamlit for alternate interactive UI
- Include more features like attendance, past scores, etc.

Contributing

Contributions are welcome! Feel free to fork the repo, open issues, or submit pull requests.

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