



A clothing style recommendation system using machine learning

Presented by

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The purpose of the project

Creating an intelligent system that helps users choose a style of clothing based on their appearance and preferences. The system uses machine learning algorithms to analyze data and predict the most appropriate clothing options, taking into account various factors such as gender, age, body type, and even the user's image.



Description of functionality

The project is a Flask-based web application that uses several machine learning models to predict the user's clothing style.

Data Download and Analysis:

The application uses a pre-assembled dataset containing various user parameters such as gender, age, body type, and clothing preferences. This data is then encoded using the Label Encoder to translate categorical features into numerical values, which allows them to be used in machine learning models.

Use of Machine Learning Algorithms:

The model uses several popular machine learning algorithms:

- Logistic Regression
- Decision Tree
- Random Forest
- K-Nearest Neighbors (KNN)
- Support Vector Machine (SVM)
- Gradient Boosting
- Linear Regression
- Naive Bayes Classifier

Each algorithm is trained on the provided data and is then used to predict the most suitable clothing style for the user.

Predictions and Model Accuracy:

After training, each model predicts the user's preferred clothing style based on the input data. These predictions are displayed on the web page, along with the accuracy of the model for each category, allowing the user to choose the most appropriate style, considering the performance of different models.

Image Processing for Age Analysis:

One unique feature of the application is the ability to upload the user's image. The application uses the DeepFace library to analyze the image and determine the user's age. This helps refine the user's age category, which in turn allows for more accurate style recommendations tailored to their age group.

Results Visualization:

The prediction results and the accuracy of different models are presented on the web page in an easy-to-understand format. Additionally, a graph is generated to show the accuracy of different models, helping users select the best model for receiving clothing style recommendations. This graph is saved as an image and displayed on the web page.

User Interface:

The web application uses Bootstrap templates to create a modern and user-friendly interface. Users can fill out a form with their gender, age, height, and body type. They can also upload a photo for more precise analysis. All this data is then passed into the system for processing and generating style recommendations.

How the System Works:

1. The user enters their data, such as gender, age, height, and body type.
2. Optionally, the user can upload an image, allowing the system to automatically determine their age using facial recognition technology.
3. The system processes this data and feeds it into the machine learning model.
4. The models calculate the most appropriate clothing style based on predictions and display the results on the web page.
5. The user can also view the accuracy of the models, which helps them choose the best model for clothing recommendations.

AI Clothing Style Recommender

Upload your photo (optional)

Выбрать файл файл не выбран

Gender

Male

Age Range

18-25

Height Range

170-180

Weight Range

80-90

Body Type

Athletic

Occasion

Sports

 Recommend Style

 Detected age: 22 → Age range: 18-25

Your Recommended Style:

Formal

 Be confident! This style is made just for you.



Цели проекта

1 Упрощение процесса регистрации пациентов.

2 Автоматизация расчетов стоимости
медицинских услуг.

3 Управление медицинскими записями и
данными пациентов.

4 Оптимизация управления зарплатами
сотрудников.

Technologies and Tools Used:

- Flask – for building the web application.
- Python – programming language for data processing and machine learning algorithms.
- scikit-learn – library for implementing machine learning algorithms, including a wide variety of models.
- DeepFace – library for image analysis and age prediction.
- Bootstrap – for designing the web application interface.
- Matplotlib – for creating graphs and data visualization.

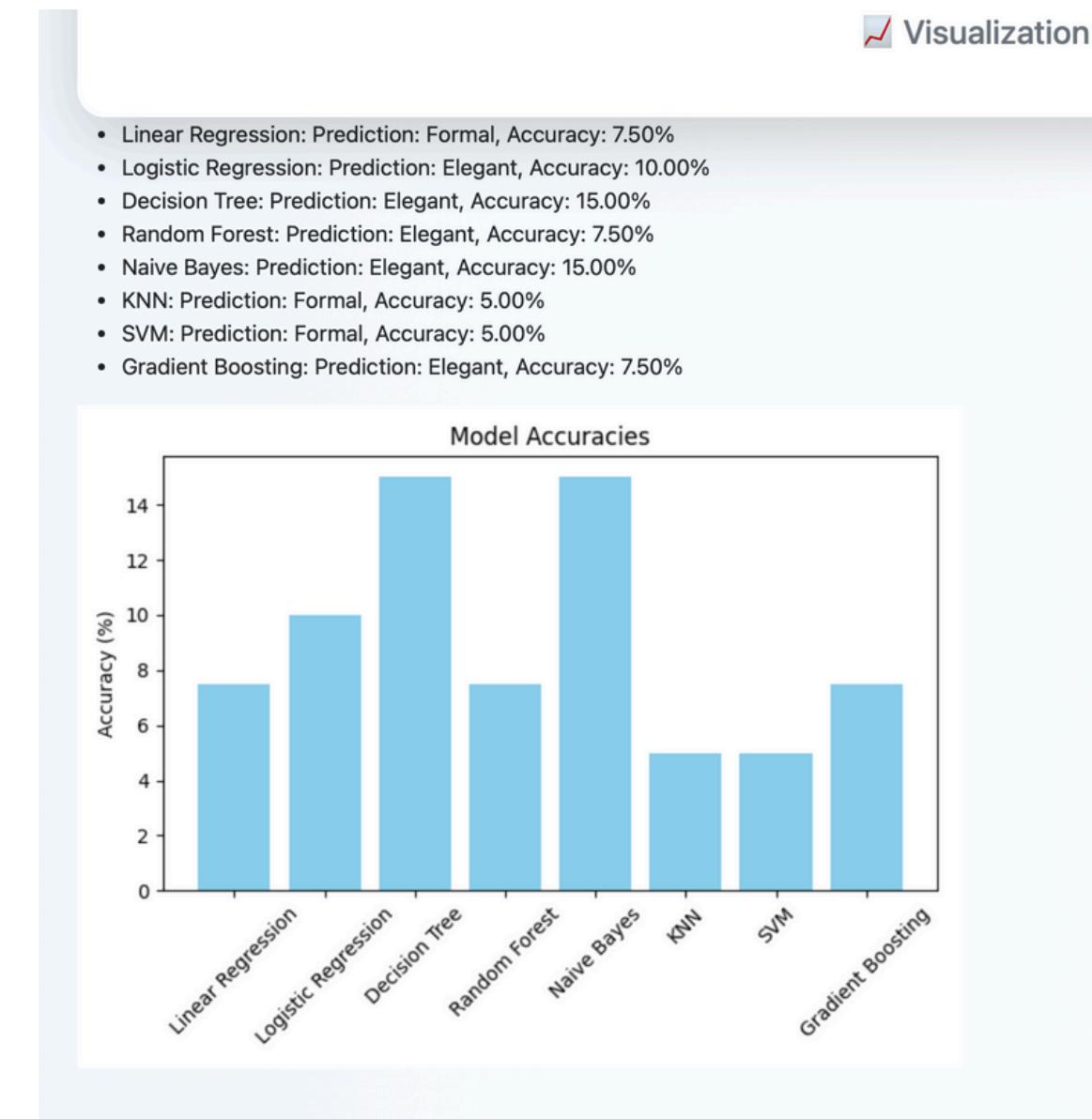
The screenshot shows a user interface for a web application. At the top right, there is a blue button labeled "Run All AI Algorithms" with a magnifying glass icon. Below this, there are four input fields arranged in a grid: "Gender" (set to "Male"), "Age Range" (set to "18-25"), "Height Range" (set to "150-160"), "Weight Range" (set to "50-60"), "Body Type" (set to "Slim"), and "Occasion" (set to "Casual"). Below these fields is another blue button labeled "Run All Algorithms".

Underneath the input fields, there is a section titled "Results from All Models" with a bar chart icon. This section lists seven machine learning models along with their predicted outcomes and accuracy rates:

Model	Prediction	Accuracy
Linear Regression	Formal	7.50%
Logistic Regression	Elegant	10.00%
Decision Tree	Elegant	15.00%
Random Forest	Elegant	7.50%
Naive Bayes	Elegant	15.00%
KNN	Formal	5.00%
SVM	Formal	5.00%

System Benefits:

1. Personalized Recommendations:
2. The use of multiple machine learning algorithms enables the system to recommend clothing styles that are tailored to the user's unique characteristics.
3. Flexibility:
4. The system provides multiple model options, allowing the user to choose the most accurate recommendations.
5. User-Friendly Interface:
6. Thanks to Bootstrap, the application interface is intuitive and easy to use for people with varying levels of technical expertise.
7. Visualization:
8. The system provides clear visual results in the form of graphs and model accuracy, helping users better understand how different algorithms perform with their data.



Conclusion

This project is an example of applying modern machine learning technologies to provide personalized clothing style recommendations. With this application, users can quickly and easily receive clothing suggestions based on their personal data and preferences. The project demonstrates how computer vision can be integrated to enhance the quality of recommendations and expands the potential of machine learning algorithms in real-world applications.