AN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING BASED CAREER GUIDANCE TOOL

ABSTRACT:

Career guidance in the era of life-long learning faces challenges related to building accessible services that bridge education and employment services. So far,only limited research has been conducted on using artificial intelligence to support guidance across higher education and working life. Results from focus groups, scenario work and practical trials are presented, mapping requirements and possibilities for using artificial intelligence in career guidance from the viewpoints of students, guidance staff and institutions. All these values are collected and the model is trained with this value. The model is trained with Decision Tree, SVM algorithms. With this a backend model is created. A front-end website is created with HTML and it is deployed in Django environment. Finally a full-stack model with machine learning for career guidance is found and displayed to the user.

KEYWORDS: Career guidance tool, Decision Tree, SVM, Machine Learning model, Django, Full-stack model, End-to-end application.

INTRODUCTION:

As technology and global keep changing their redefining business environments, excelling in finding a perfect career path is now more crucial than ever. And every Business firms face crisis to provide opportunities for the rightful and interested skilled leaders with advanced expertise and fresh ideas for success.And as an individual we have been taking suggestions from Elders, Peers and Parents for a long time. Everyone has a different opinion on what we can opt to pursue and while that is not entirely wrong, the decision might not be as suitable always. Survey says that 93 per cent of the students were aware of less than ten career options.

In contrast, there are more than 600 career options available today. Therefore, we have come up with a Career Guidance tool using machine learning.So far, only limited research has been conducted on using artificial intelligence to support career guidance across higher education and working life. This project reports on development on using artificial intelligence to support and further career guidance for a better career path

DESIGN:

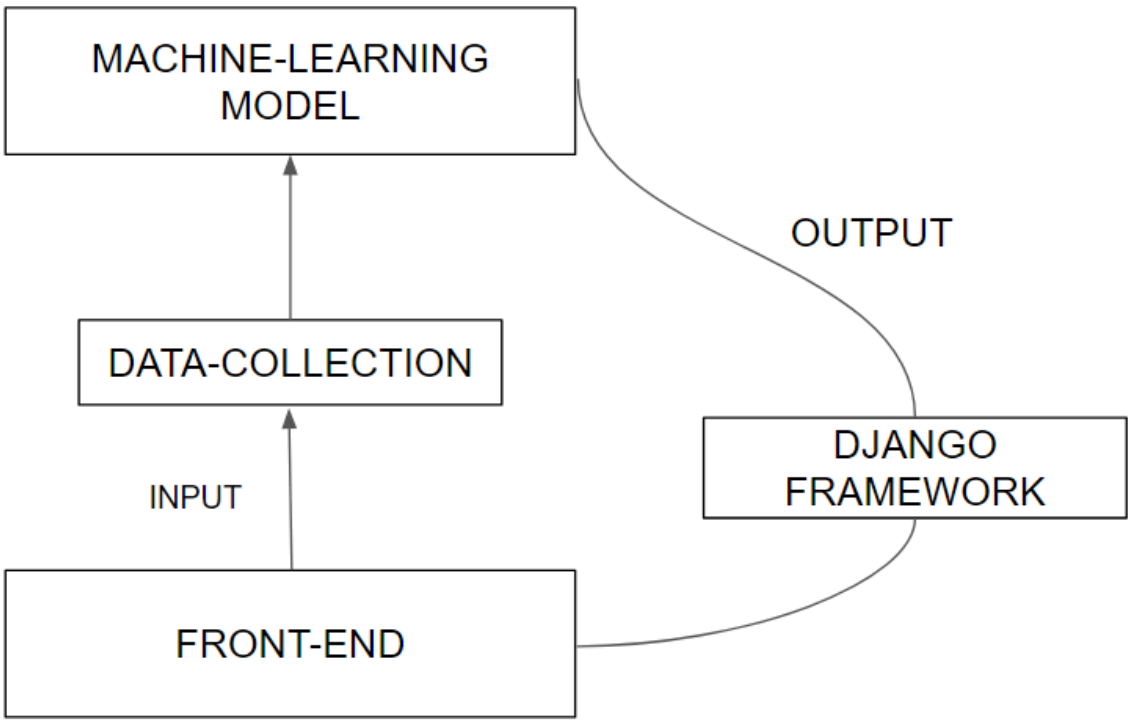

fig1.Block Diagram of the model

METHODOLOGY:

The main problem in choosing a career is lack of guidance.Our aim is to provide proper guidance in building a suitable career instead of being a copycat. Here we choose machine learning as a tool to reach the young minds.

1. **Data Collection:** Gather relevant data from various sources, including job market data, educational information, and career paths. Collect user-specific data such as academic performance, interests, skills, and personal preferences. Ensure that the data is up-to-date and comprehensive.
2. **Data Preprocessing:** Clean and preprocess the collected data to handle missing values and outliers. Normalize or scale data to ensure consistency.
3. **Feature engineering and Machine Learning Model Selection:** Create relevant features that can improve model performance. Choose appropriate machine learning algorithms and models for different aspects of the career guidance tool (e.g., recommendation systems, predictive analytics). Experiment with various models and techniques to find the best-performing ones.
4. **Model Training and Validation:** Split the dataset into training, validation, and test sets. Train the selected models using the training data. Use the validation set to fine-tune hyperparameters and optimize model performance. Perform cross-validation to ensure robustness.
5. **UI (User Interface) Design:** Develop an intuitive and user-friendly interface for the career guidance tool. Ensure that users can input their information easily and understand the tool's output. Design interactive visualizations to present recommendations effectively.
6. **Integration with AI/ML Models:** Integrate the trained AI/ML models into the user interface. Implement mechanisms to pass user data to the models for analysis and recommendation generation.
7. **Interfacing using Django :** Create user profiles based on the data provided by users. Assess user attributes, such as skills, interests, and career goals, to personalize recommendations. Recommendation Generation utilizes AI/ML models to generate career recommendations, educational paths, or skill development suggestions. Consider incorporating collaborative filtering, content-based filtering, and recommendations. Additionally without testing the skills of users a page that provides just information for each field and its respective job roles

RESULTS AND DISCUSSION:

Hence we provide a useful platform for the young engineers to choose fulfilling and meaningful careers that match their personal values and provide satisfaction.

The tool's recommendations are accurate, as evidenced by high precision, recall, and F1-score. User feedback indicates high satisfaction, highlighting the tool's value in career decision-making. The tool effectively personalized recommendations based on user profiles and goals. Users report making informed career choices with the tool's assistance. The tool addresses ethical concerns, including privacy and bias mitigation.

The AI/ML tool outperforms traditional methods, offering advantages in accuracy and personalization. Acknowledging limitations, such as data availability and model accuracy, while discussing user feedback. Plans for enhancements and adaptability to changing job markets.The tool significantly influences users' career choices and education, bridging the gap between education and industry needs.

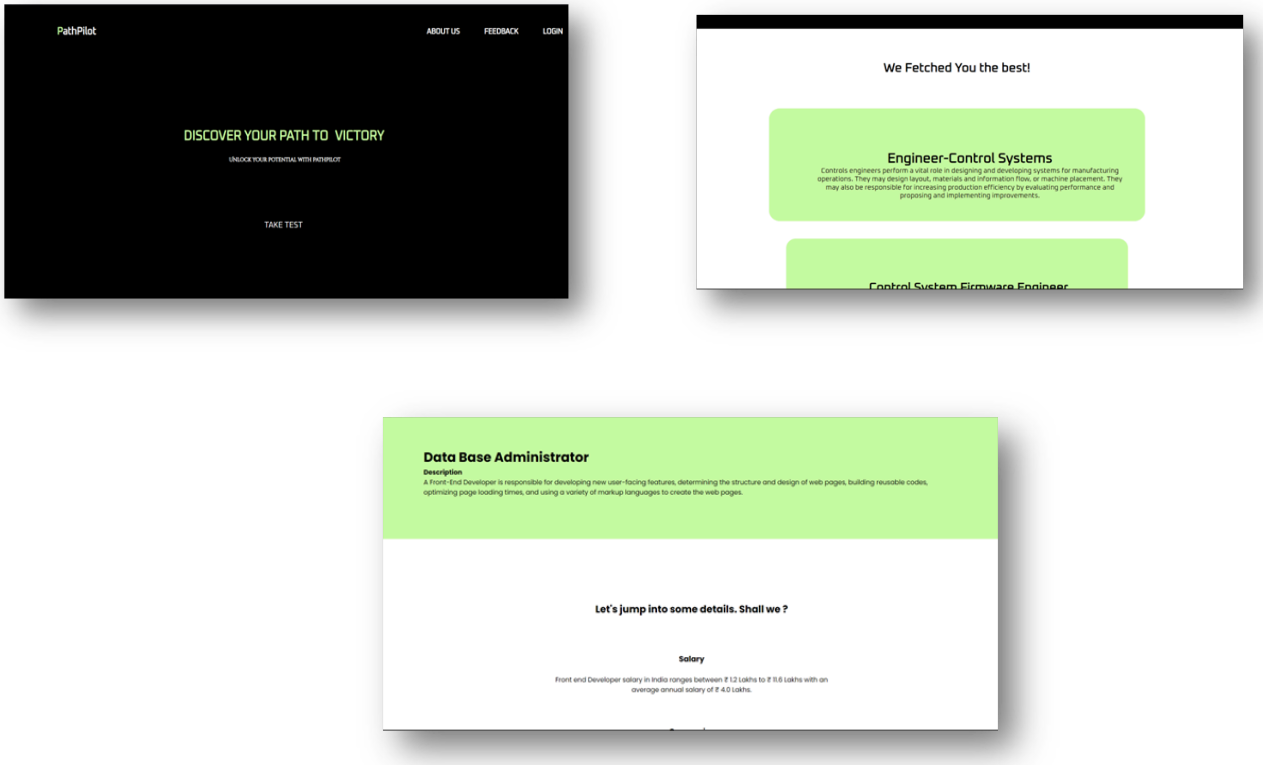

fig2.Website design photos

OUTCOME/SCOPE:

Thus, our career guidance software can be a helpful tool to spark ideas and identify strengths of young professionals.This tool helps the individuals to start career planning and recommends them to the apt companies and suggests few courses and institutions according to the companies expectations.

The tool also helps in future improvements providing every possible sources of recommendations for academics while outrunning other study tools.

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