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| Project Report: Cinemix ML Recommender |  |
| Identity Guidelines |  |
|  | **Introduction to Data Mining** | |
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|  | Introduction**Cinemix** is a dynamic and modern web application developed to change the way users explore movies. Designed with simplicity and efficiency in mind, **Cinemix** offers a visually attractive interface to enhance the user’s experience. The platform uses the capabilities of **TypeScript** to ensure a robust and error-resistant code throughout the project’s development cycle. *One of the standout features of* ***Cinemix*** *is its* ***AI-powered ML recommender******system****, which provides tailored movie recommendations based on user preferences and behavior. This intelligent system enhances the user experience by making personalized suggestions, helping users discover movies that match their unique tastes. Additionally,* ***Cinemix*** *integrates real-time data from an external movie API to showcase the latest releases, popular titles, and various genres, including top-rated, comedy, and action films.* | |  |
|  | The development of **Cinemix** incorporates a wide array of tools and frameworks, including React, **TailwindCSS**, **TypeScript**, **Flask**, and **Python**, to build a seamless and feature-rich application. The use of TypeScript played a crucial role in improving developer productivity through static typing and advanced features, ensuring clean and maintainable code throughout the project.  This report shows the details behind the making of **Cinemix**, highlighting key structures and features.  Additionally, it showcases the development of the **ML recommender system** and the tech stack used to create a dynamic movie exploration platform. | How to Create a Flask Application as a Python Package | by Eric van Rees |  Python in Plain English |  |

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|  | Benefits of Python & Flask in Datamining for Cinemix. | **Versatility of Python for Data Mining**, Python’s versatility and extensive library ecosystem make it a powerful tool for data mining in **Cinemix**. Its readability and simplicity allowed us to write clean, maintainable code for handling complex operations, such as building the AI ML recommender system which is the core purpose of this project.  **Efficient Data Mining with Python; by importing** Python’s data mining libraries, such as **Pandas** and **NumPy**, were used to preprocess and analyze movie datasets and user interaction data.  **Flask’s Lightweight and Flexible Nature** Even though Flask was something very new to us we found out that. Its minimalistic approach ensured that only essential components were included, optimizing performance. |  |
|  | Machine Learning using KNN: Analysis **Libraries Used:**    **Function to fetch the movie details from API:**    **This combines both binarized list + the sparse list**    **Inserts all movie details in a list and calls the NearestNeighbors() function to train KNN**    Python Programming PNG, Vector, PSD, and Clipart With Transparent  Background for Free Download | Pngtree TypeScript Concepts Used: **Interfaces**:    **Functions:**    **Importing Other Pages:**    **State variables:** | |  |

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| **Conclusion:** The integration of Flask with Python's data mining libraries facilitates real-time personalized movie recommendations, enhancing the overall user experience. Together, Flask and Python provide the ideal tools for building a ML system that supports the future growth and expansion of Cinemix. |
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