PROJECT PROGESS REPORT (Week 3)

"Caffeine Overflow's - Ai driven virtual try-on system in E-commerce"

Junior Design

CSE299

Semester: Summer 2024
Section: 15

North South University

Department of Electrical & Computer Engineering

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Lecture

Project Overview:

Our project focuses on developing an AI-driven virtual try-on system that leverages e-commerce technologies, augmented reality (AR), and 3D modeling to enhance online shopping experiences. This system will allow users to try on clothing virtually, making it easier to make purchasing decisions while reducing product returns.

Progress Made in Week 3:

Frontend Development:

- **Responsiveness:** Frontend development focused on making the design responsive, ensuring that it adapts to devices of all sizes, such as mobile, tablet, and desktop screens**.**
- **Admin Panel:** An admin panel was developed, enabling product management through features such as adding products (AddProduct), viewing product lists (ProductList), and removing products (RemoveProduct).
- **Responsiveness of Admin Panel:** The admin panel was also made fully responsive to ensure proper functionality across various devices.

Progress:
The frontend and admin panel have become fully responsive, ensuring a consistent user experience across all device sizes. Postman was used to test the API endpoints and verify backend integration with the frontend.

Postman Testing & Console Debugging:

- **Postman Issues:** Encountered issues during Postman testing, where API endpoints were not functioning as expected.
- **Console Debugging:** After troubleshooting the issues via the console and addressing backend integration problems, she was able to resolve the bugs and successfully complete Postman testing.
- **Final Result:** The API endpoints and admin functionalities now work perfectly, with smooth interaction between the frontend and backend.

Progress:
Despite initial difficulties, Postman testing was completed successfully after thorough debugging, ensuring that the admin panel integrates well with the backend.

Model Training & 3D Model Generation:

- **Out of Memory Issues:** Significant challenges were encountered during model training due to out-of-memory issues. These issues hampered the training process and required adjustments to the model's batch size and configuration.
- Several machine learning models were attempted, and after trial and error, the Sequential model was chosen as the best fit for generating 3D models**.**
- **Week-Long Training Process:** Given the memory constraints, the training process took an entire week to complete. During this time, a 3D .obj file and model weights were successfully generated.
- **Model Utils:** Utility functions were developed to support the Sequential model during the training process.

Progress:
Despite the memory limitations, the Sequential model was trained over the week, generating a working 3D model and the corresponding weights, which will be used for further visualization and testing.

Challenges & Areas Yet to Be Completed:

- **Out of Memory Issues:** The model training process faced multiple out-of-memory errors, making it difficult to train the models efficiently. This caused delays, and model optimization is still a work in progress.
- **3D Model Refinement:** While a basic 3D model has been generated, more work is required to improve the quality and ensure smooth visualization in the AR environment.
- **Full E-commerce Integration**: Further integration is needed to incorporate these advancements into the overall e-commerce platform, including improved product management and purchasing features.

Contribution:

Aporbo	Tasfia
Worked on training models and selecting the best one for generating 3D models. Finalized the Sequential model.	Worked on frontend responsiveness and the admin panel.
Overcame out-of-memory issues and managed a week-long training process to generate the 3D .obj file and model weights..	Encountered and resolved Postman testing issues through console debugging, ensuring proper functionality.
Developed utility scripts to support model training and further visualizations.	Developed AddProduct, ProductList, and RemoveProduct features in the admin panel.

Conclusion:

Week 3 involved tackling significant memory issues during the model training process, which slowed down progress. Despite this, the Sequential model was successfully trained, and a 3D .obj file was generated. The frontend and admin panel have also been made responsive, with Postman testing successfully completed after resolving initial issues. The groundwork for further development in Week 4 has been laid.