

ADIDAS & NIKE PRODUCTS

PRESENTED TO
VIETNAM DATATHON 2023

PRESENTED BY
ĐMM (Đội May Mắn)

CONTENT



Introduction



Problem statement



Solution overview



Methodologies



Core functionality



Performance metrics



Timeline and
roadmap



Limitation and
future enhancement



Conclusion



Introduction

- The dataset encompasses details on over 1500+ Adidas and 100+ Nike products.
- It comprises comprehensive information about each product, including names, prices, ratings, reviews, and the respective URLs directing to their official listings on the respective websites.

Problem statement

Personalization

LACK OF PERSONALIZATION

Customers are struggle to find products which are suitable for their preference.

Visualization

LIMITED VISUALIZATION

The inability to try on or visualize products most likely leads to uncertainty in purchasing decisions

Solution overview

To tailor and visually enhance to optimize the customer experience, our solutions are:

1

Create an AI chatbot
to personalize
customer service

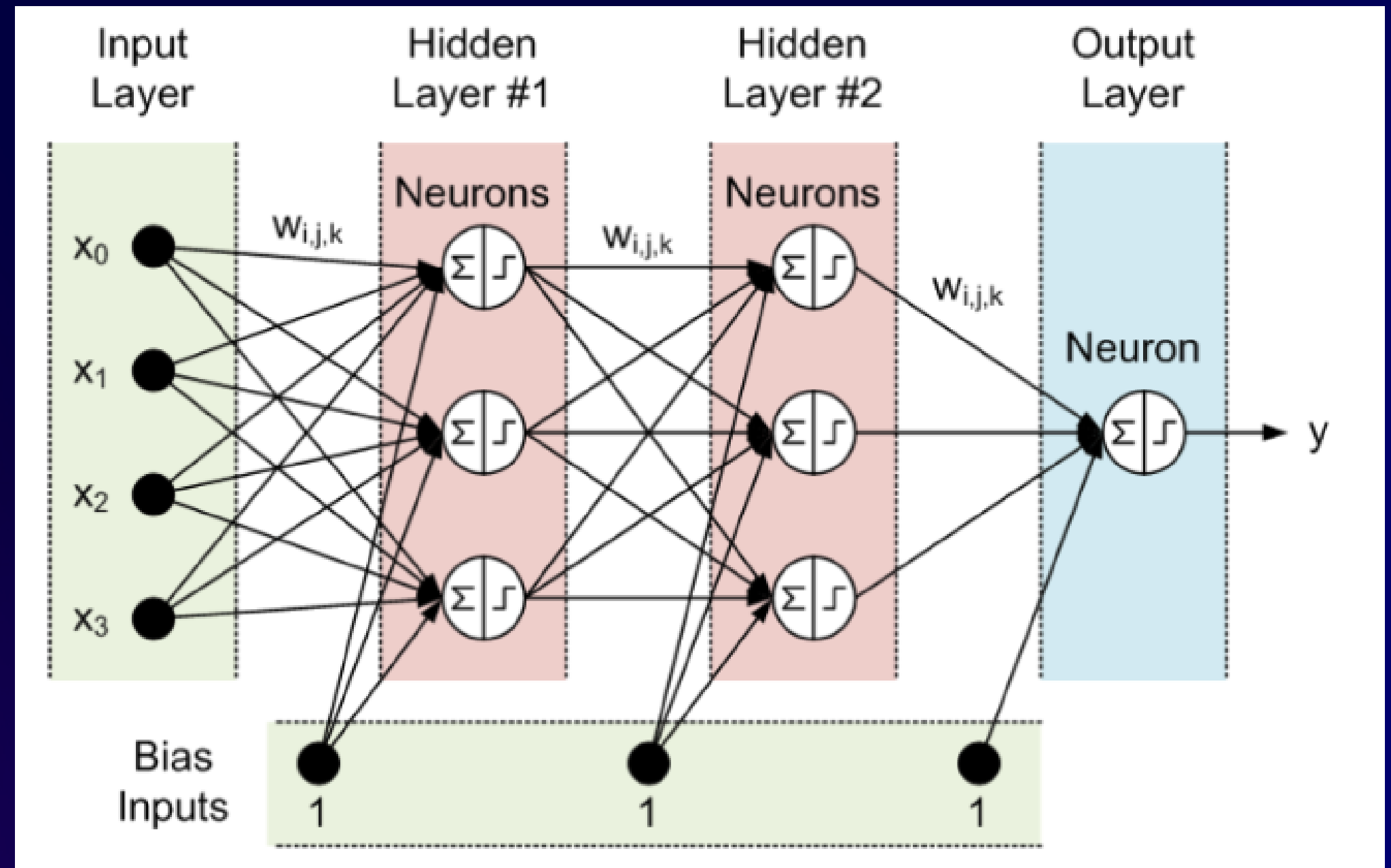
2

Create a virtual fitting
room allow customer
upload an image of
their preference

Methodologies

Employ neural networks, including Recurrent Neural Networks (RNNs) and Convolutional Neural Networks (CNNs), to categorize customer queries.

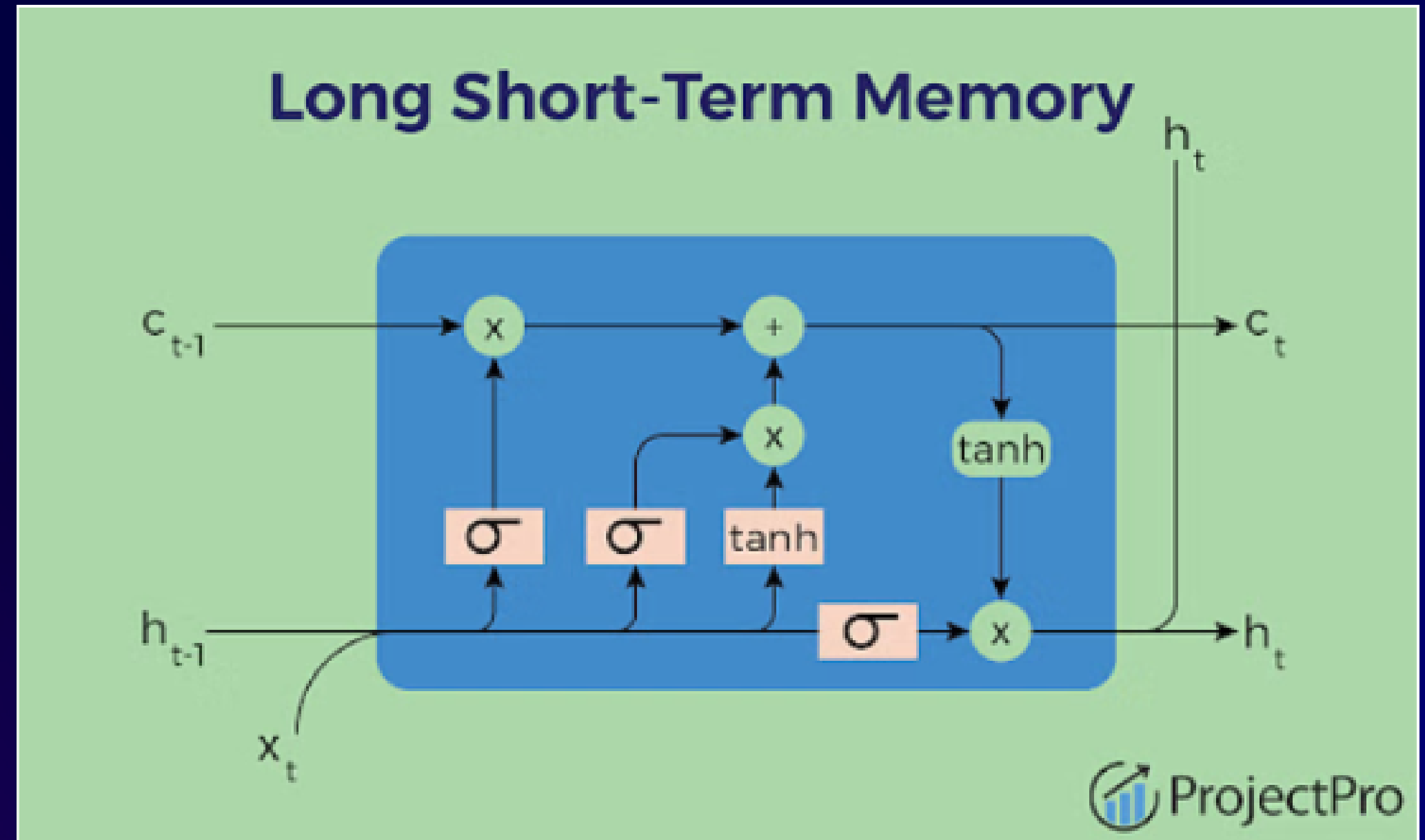
The fundamental architecture consists of an input layer, a hidden layer, and an output layer.



Methodologies

Long Short-Term Memory, a specialized iteration of RNN, is crafted to overcome the issue of vanishing gradients commonly encountered during the training of conventional RNNs.

The LSTM architecture comprises gates, a cell state, and a hidden state.



Methodologies

YOLO, or You Only Look Once, is a real-time object detection algorithm to discern and capture customer preferences and style by analyzing the images they upload.

The YOLO architecture comprises four fundamental components: grid division, bounding box predictions, class probabilities, and the application of non-maximum suppression.



Core functionality

Function # 1

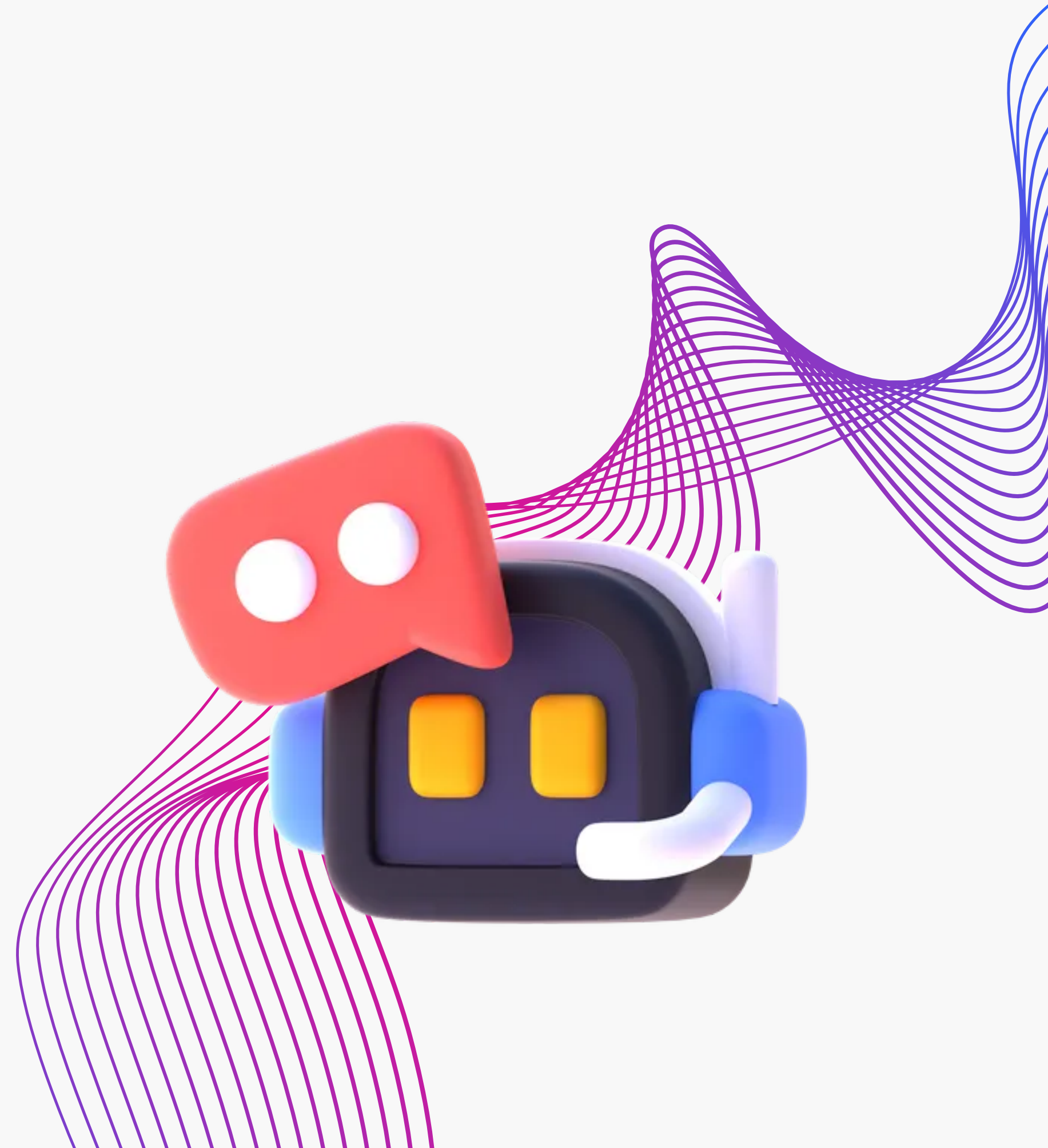
Address customer queries.

Function # 2

Recommend tailored products.

Function # 3

Enable image uploads for personalized product predictions.



Performance metrics

For the mentioned algorithms, the key performance metrics proposed to gauge the success are as follows:

For CNN:

- Accuracy:

Measures the overall correctness of image classifications, representing the ratio of correctly predicted instances to the total instances.

- Precision and Recall:

Precision: Assesses the model's ability to correctly identify positive instances, indicating the accuracy of positive predictions.

Recall: Measures the model's capability to capture all positive instances, providing insight into the model's sensitivity.

- F1 Score:

Represents a balanced measure between precision and recall, offering a single metric to assess the overall performance of the model.

- Training and Inference Time:

Evaluates the efficiency of the model during both the training phase and real-time inference, influencing the practical usability of the model.

Performance metrics

For the mentioned algorithms, the key performance metrics proposed to gauge the success are as follows:

For YOLO:

- **Mean Average Precision (mAP):**

Measures the average precision across multiple object categories, providing a comprehensive evaluation of the model's precision.

- **Frames per Second (FPS):**

Indicates the speed of object detection during real-time processing, reflecting the model's efficiency in a dynamic environment.

- **Intersection over Union (IoU):**

Assesses the accuracy of bounding box predictions by measuring the overlap between predicted and ground truth boxes.

- **Training Convergence:**

Monitors the convergence speed and stability during the training phase, indicating how quickly and reliably the model learns from the training data.

Timeline

Major milestones and deliverables for this project would be:

Day	Activities
1-2	Project Kickoff, Data Collection and Preparation <ul style="list-style-type: none">- Define project scope, objectives, and team roles.- Gather and preprocess the dataset for training and testing.
3-4	Model Selection and Development <ul style="list-style-type: none">- Decide on the architecture and models (CNN, RNN, YOLO) to be used.- Implement and train the selected models based on the dataset.
5	Integration with Chatbot <ul style="list-style-type: none">- Integrate the models into the chatbot infrastructure for seamless functionality.
6	Functionality Testing <ul style="list-style-type: none">- Ensure that the chatbot effectively answers queries and provides accurate product recommendations.
7	Image Upload Feature <ul style="list-style-type: none">- Implement the image upload feature for personalized predictions.

Timeline

Major milestones and deliverables for this project would be:

Day	Activities
8	Training, Evaluation, and User Testing <ul style="list-style-type: none">- Train models with the integrated image dataset and evaluate performance using defined metrics.- Conduct user testing to gather feedback on the chatbot's usability and accuracy.
9	Refinement and Optimization <ul style="list-style-type: none">- Refine models and algorithms based on user feedback and identified improvements.
10	Documentation <ul style="list-style-type: none">- Document the system architecture, model details, and usage guidelines.
11	Performance Monitoring <ul style="list-style-type: none">- Implement mechanisms to monitor the ongoing performance of the chatbot and associated models.
12	Final Testing <ul style="list-style-type: none">- Conduct comprehensive testing to ensure all functionalities work seamlessly.

Limitation and future enhancement

Project Limitations:

- Data bias may affect recommendation accuracy.
- Image quality could impact image-based predictions.
- Limited handling of nuanced or ambiguous user queries.
- Model complexity may affect real-time performance.

Future Enhancements:

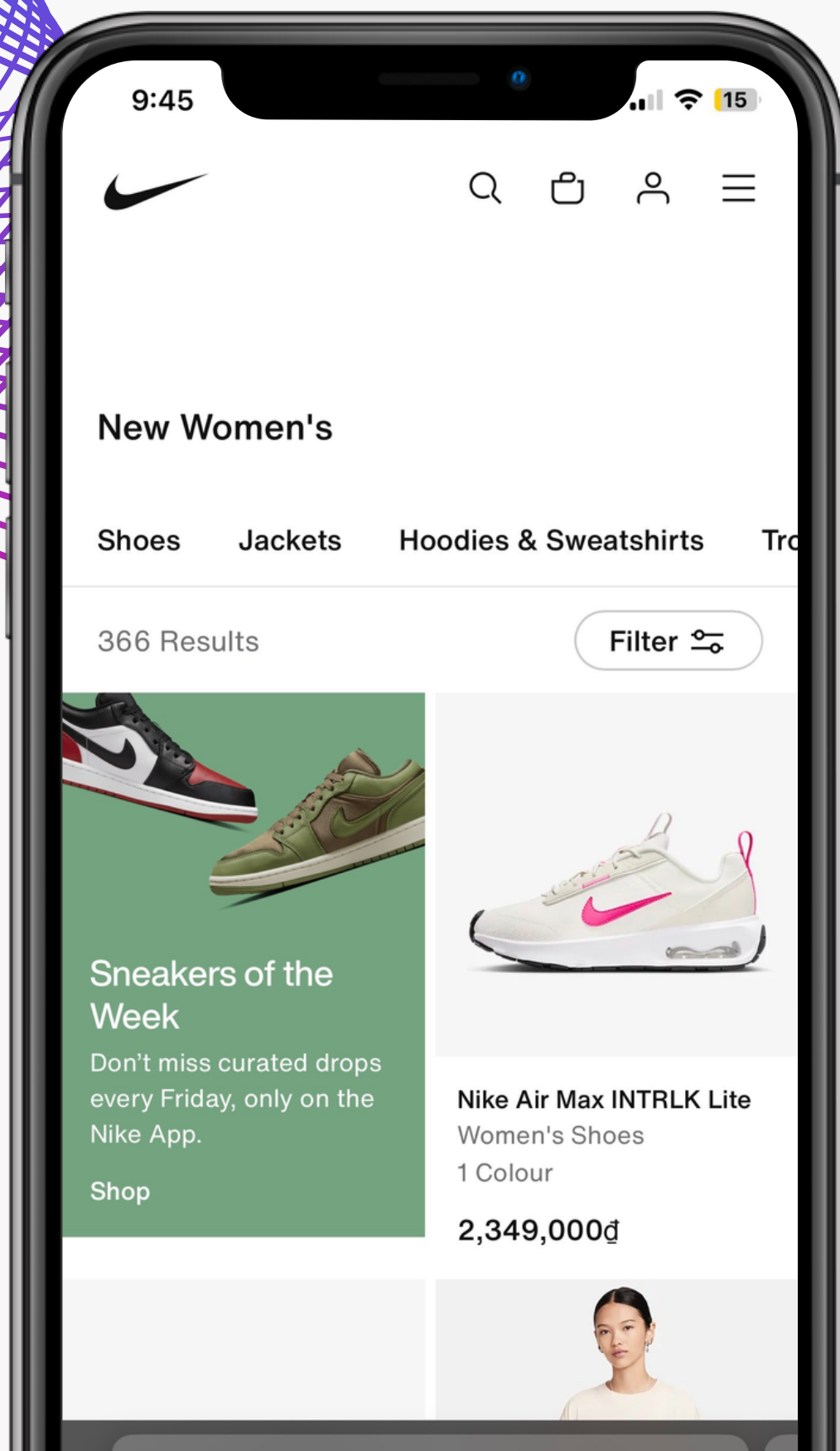
- Integrate augmented reality for virtual try-ons.
- Tailor recommendations based on regional or cultural preferences.
- Provide explanations for recommendations to enhance trust.
- Ensure accessibility for users with different abilities.

These considerations pave the way for addressing limitations and enhancing the project's capabilities in the future.



Conclusion

This project integrates advanced AI models like CNN, RNN, and YOLO to power a chatbot delivering personalized product recommendations. While addressing limitations such as data bias and image quality, we foresee future enhancements like multi-modal learning and augmented reality integration. Our goal is to revolutionize the customer experience, offering an engaging and efficient shopping journey through continuous innovation.



Thank you for watching

We sincerely appreciate your time and thoughtful consideration in reviewing our presentation. Thank you for your attention and valuable insights.