

AI Chatbots: An Overview

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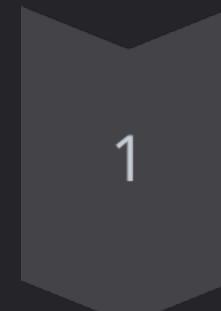
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Introduction to What Are AI Chatbots

AI chatbots are software programs that simulate human conversation.

They use artificial intelligence to understand and respond to user inputs.



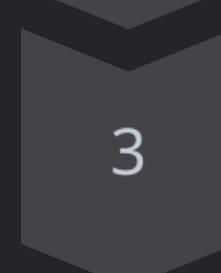
1 Conversational Agents

Chatbots engage users across text and voice platforms efficiently.



2 Automation & Assistance

They automate routine tasks and provide instant support anytime.



3 AI Foundations

Built on NLP and machine learning for improved interaction.





Module 1: Natural Language Processing (NLP)

Purpose

Understand and interpret human language accurately.

Techniques

- Tokenization
- Parsing
- Sentiment analysis

Key Components

- Text analysis
- Intent recognition
- Entity extraction

Example

Detecting customer frustration via sentiment analysis in chats.



Module 2: Machine Learning (ML)

Goal

Enable chatbots to learn and improve from data.

Algorithms

- Supervised learning
- Unsupervised learning
- Reinforcement learning

Training Data

Dialogue datasets and real customer interactions.

Example

Chatbots optimizing responses based on past conversations.

Module 3: Dialogue Management

Core Task

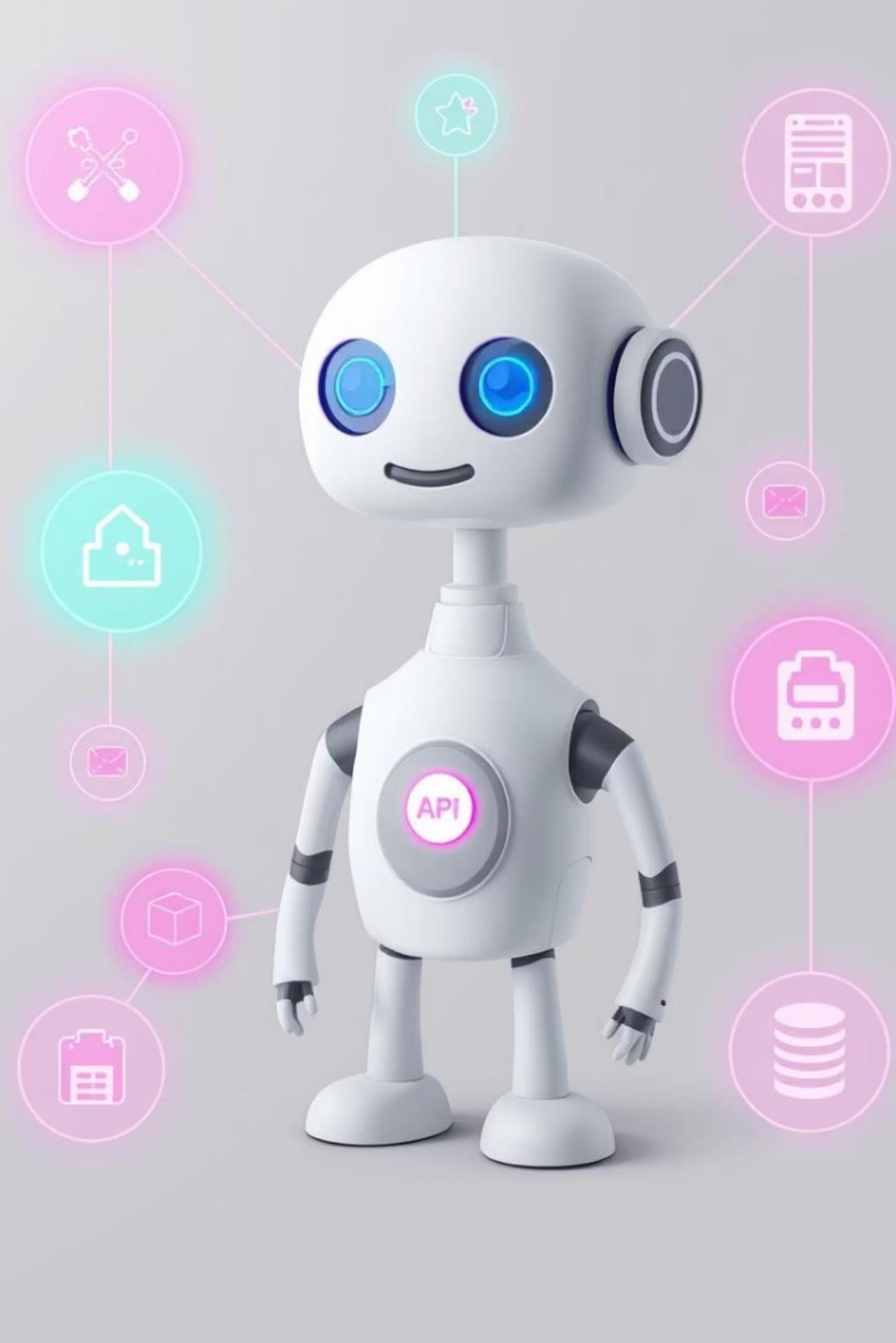
Manage conversation flow and maintain context.

Techniques

- State management
- Turn-taking
- Context switching

Example

Guiding a user step-by-step to troubleshoot an issue effectively.



Module 4: Integration and APIs



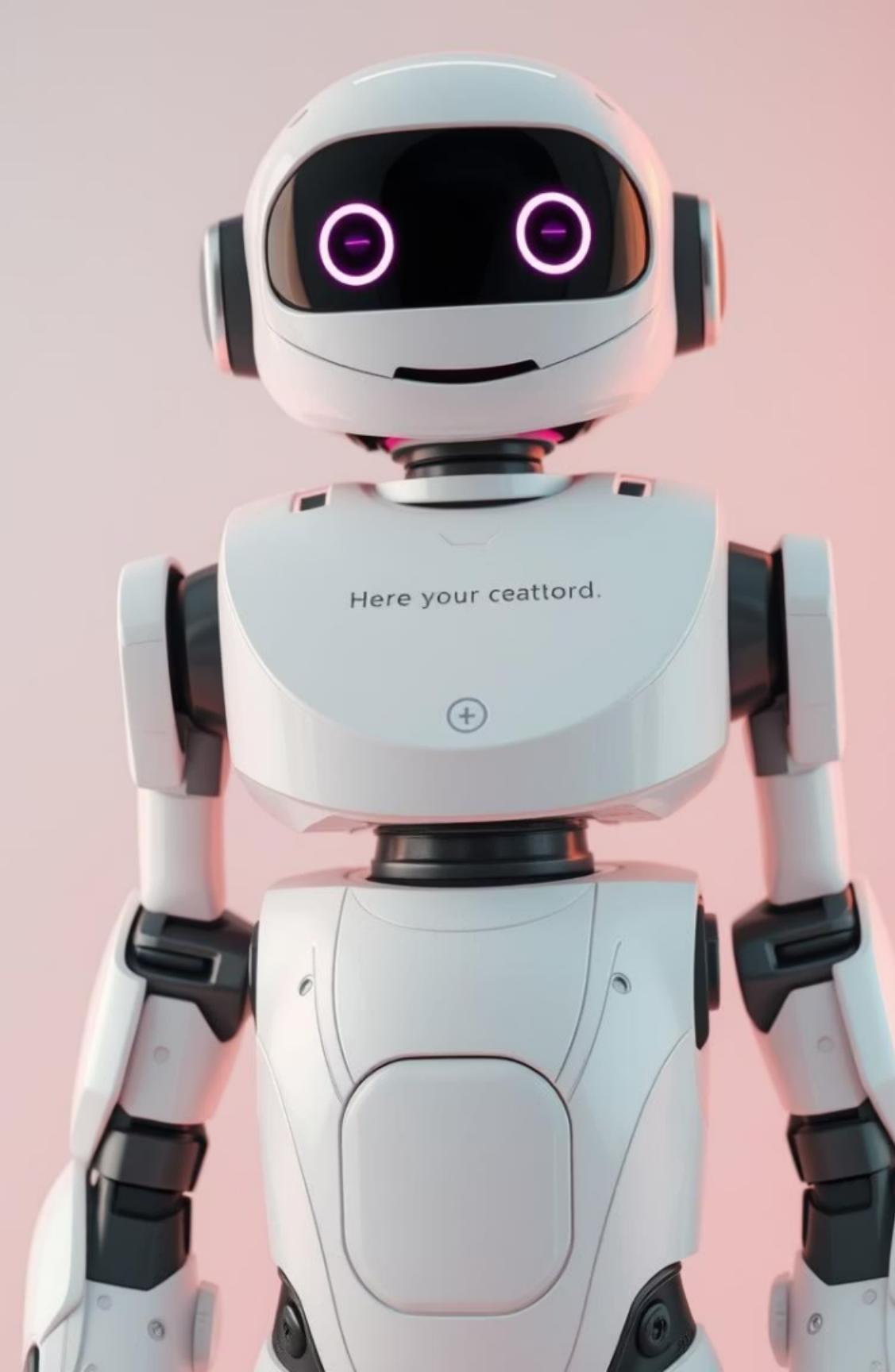
External Data

Connect to databases to
fetch live information.



Dynamic Access

Retrieve up-to-date data
for accurate responses.



Real-World Applications: Customer Support

Basic Queries

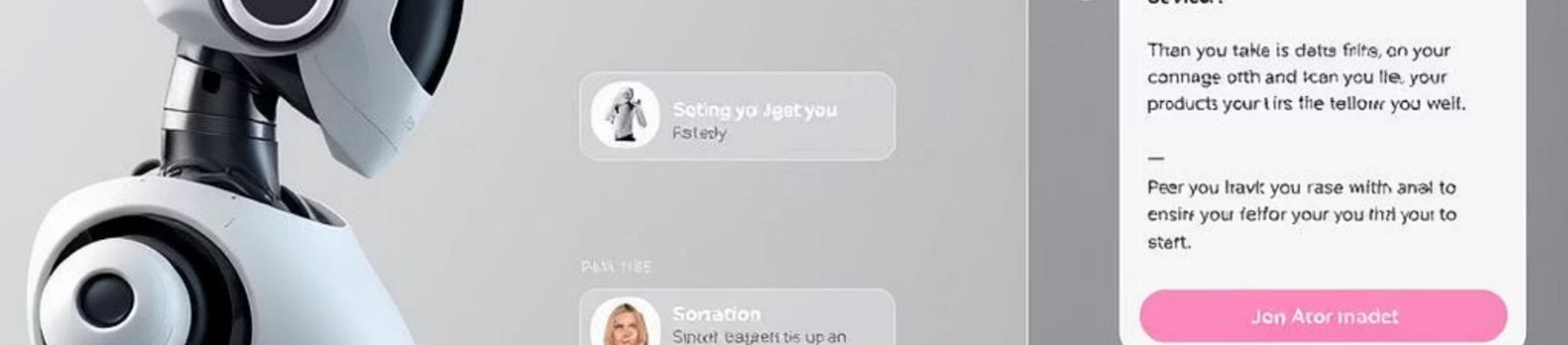
Chatbots resolve routine questions instantly and accurately.

Issue Escalation

Complex problems are escalated to human agents smoothly.

Improved Metrics

Reduced wait times and higher customer satisfaction scores.



Real-World Applications: Sales and Marketing

1

Lead Generation

Automatically capture and qualify sales leads.

2

Personalized Offers

Recommend products based on user preferences and history.

3

Conversational Marketing

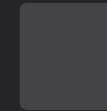
Drive engagement through tailored, interactive dialogues.

4

Boost Sales

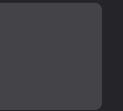
Increase conversion rates by up to 25% through chatbots.

The Future of AI Chatbots



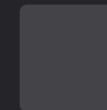
Trends

LLM advances, voice integration, and hyper-personalization.



Challenges

Ethics, biases, and securing user data remain critical concerns.



Outlook

Chatbots will be proactive, intelligent, and more human-like soon.

