VIDYABHARTI TRUST COLLEGE OF BUSINESS, COMPUTER-SCIENCE AND RESEARCH, UMRAKH

(Affiliated with Veer Narmad South Gujarat University, Surat)

Department of Computer Application
Newsletter

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DIGITAL +

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Contents

What is AI?

Artificial Intelligence (**AI**) is a branch of computer science that focuses on creating machines or systems that can **think, learn, and make decisions like humans**.

Daily Life Examples of AI

1. **Smartphones**
   1.1   Face Unlock / Fingerprint Unlock

   1.2   Voice Assistants (Siri, Google Assistant, Alexa)

1.3   Keyboard Auto-Correct & Predictive Text

2. Internet & Apps

2.1   Google Search (auto-suggestions, ranking)

2.2   YouTube / Netflix / Spotify Recommendations
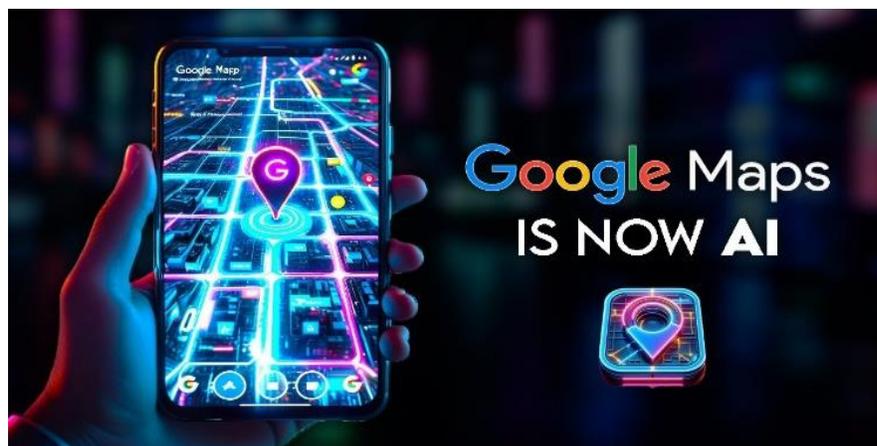
2.3   Instagram & Facebook Feed (personalized content)

2.4   Amazon / Flipkart product recommendations

2.5   Online Ads – Targeted Advertising

3. Transport & Travel

3.1   Google Maps (traffic prediction, route planning)

3.2   Uber / Ola (ride matching, fare calculation)
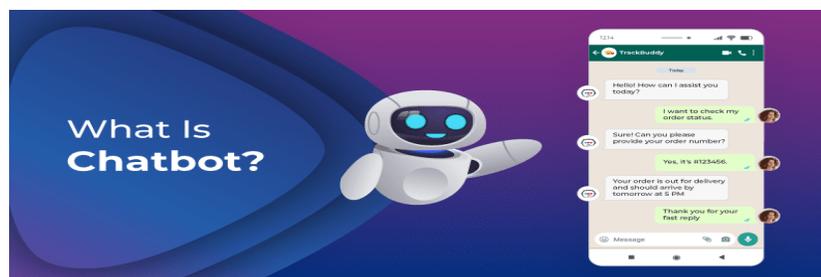
3.3   Self-Driving Cars (Tesla, Waymo)

4. Banking & Finance

4.1   Fraud Detection in Online Payments

4.2   Chatbots for Banking (HDFC EVA, SBI YONO assistant)

5 E-commerce & Shopping

5.1   Virtual Try-On (clothes, glasses, makeup)

5.2   Product Recommendations
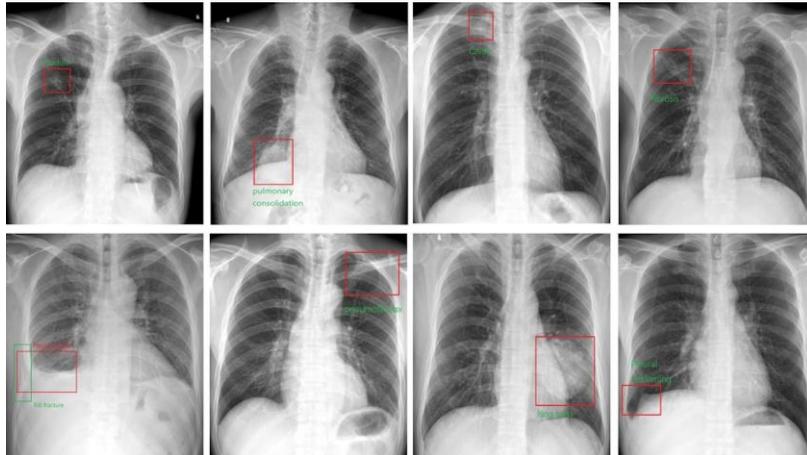
5.3   Voice Search in Shopping Apps

5.4   Customer Support Chatbots

6. Healthcare

6.1   AI in Smart Watches (heart rate, ECG, sleep tracking)

6.2 AI in Radiology (detecting X-ray, MRI issues)

7. Home & Lifestyle

7.1 Robotic Vacuum Cleaners (Roomba, Mi Robot Vacuum)
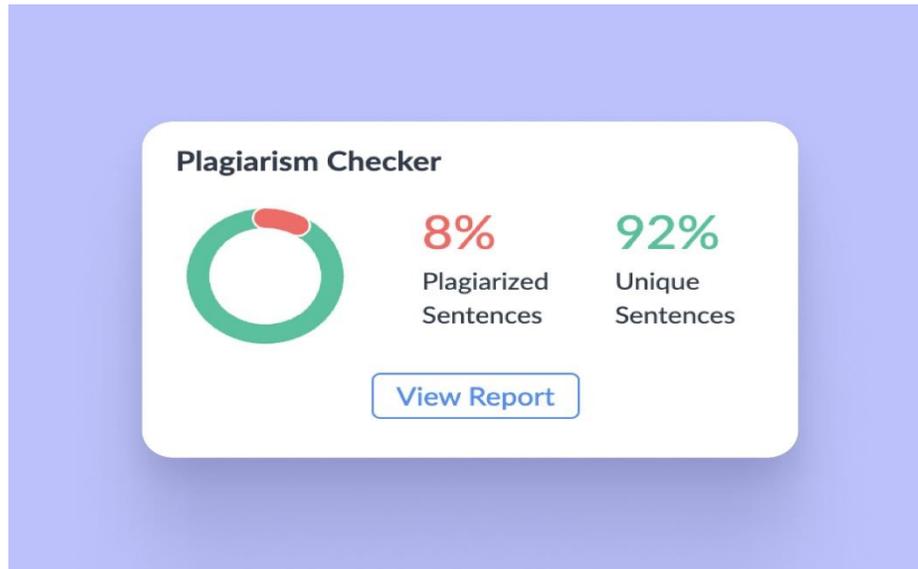
7.2 Voice-Controlled Smart TVs

8. Education

8.1 AI Tutors & Chatbots (ChatGPT, Duolingo Bots)

8.2   Plagiarism Checkers (Turnitin, Grammarly AI)

9. Entertainment & Creativity

9.1   AI-generated Art & Photos (DALL·E, Canva AI)

9.2   AI Music Recommendation (Spotify, Apple Music)

9.3   Video Editing & Filters (TikTok, Snapchat lenses)

Roadmap to Learn AI?

1. Foundation (Math + Programming)

- Mathematics (very important for AI/ML):
    - Linear Algebra (vectors, matrices, eigenvalues)
    - Probability & Statistics (distributions, Bayes theorem)
    - Calculus (derivatives, gradients, optimization)
- Programming:
    - Learn Python (most used in AI).
    - Libraries: NumPy, Pandas, Matplotlib, Seaborn

2. Data Handling & Analysis

- Learn Data Preprocessing & Cleaning
- Visualization: Matplotlib, Seaborn, Plotly
- SQL basics (to fetch data from databases)

3. Machine Learning (ML Basics)

- Supervised Learning (Linear Regression, Logistic Regression, Decision Trees, Random Forest, SVM)
- Unsupervised Learning (Clustering: K-Means, PCA, DBSCAN)
- Evaluation Metrics (Accuracy, Precision, Recall, F1, ROC)
- Libraries: Scikit-learn

4. Deep Learning (Neural Networks)

- Basics of Neural Networks (Perceptron, Backpropagation, Gradient Descent)
- Frameworks: TensorFlow, PyTorch
- Computer Vision (CNN)
- Natural Language Processing (RNN, LSTM, Transformers, ChatGPT-like models)

5. **Specialized AI Fields**

- Computer Vision: Image recognition, object detection (OpenCV, YOLO, ResNet)
- Natural Language Processing (NLP): Sentiment analysis, chatbots, transformers (BERT, GPT)
- Reinforcement Learning: Agents, Q-Learning, Deep Q-Networks

6. **Projects & Hands-On Practice**

- Spam Email Classifier (ML)
- Handwritten Digit Recognition (DL, MNIST)
- Image Classifier (Cats vs Dogs)
- Chatbot using Transformers
- Stock Price Prediction

7. **Tools & Platforms**

- Jupyter Notebook, Google Colab (free GPU)
- Hugging Face (for NLP models)
- Kaggle (datasets + competitions)

8. **Career / Advanced Learning**

- Cloud AI: AWS, GCP, Azure AI Services
- MLOps (deploy AI models in production)
- Keep updated with research papers (arXiv, Google Scholar)

Future of AI

1. AI in Jobs & Career

- AI will create **millions of new jobs** in data science, machine learning, robotics, cybersecurity, and healthcare.
- Some routine jobs may get automated, but **new roles** like AI trainers, model explainers, and AI ethicists will emerge.
- By 2030, AI could contribute **$15 trillion** to the global economy (PwC report).
- By 2030, India is projected to require approximately **1 million AI professionals** to meet the growing demand across various sectors. This demand encompasses a wide range of roles, including AI/ML engineers, data scientists, AI researchers, and specialists in domains such as natural language processing, computer vision, and robotics.

2. AI Companies in India by City

➢ Bengaluru (Karnataka)

- Pixis – AI-driven marketing automation platform.
- Observe.AI – AI-powered call center analytics and automation.
- Jiffy.ai – Enterprise automation using AI and low-code platforms.
- Manthan – AI-powered analytics solutions for retail and consumer goods industries.
- Infilect Technologies – Visual intelligence powered by image recognition AI for real-time in-store execution insights.
- Murf.AI – AI-enabled text-to-speech platform.
- Netradyne – AI fleet safety technology.
- Locus – End-to-end logistics solution powered by AI.
- Kristal.AI – AI-driven private banking solutions.
- Lavelle Networks – AI-driven SD-WAN solutions for enterprise networking.

- Humbi.AI – Competitive intelligence analytics for health plans and drug manufacturers.
- Interface.AI – Conversational AI solutions tailored for banks and credit unions.
- Invento Robotics – Develops industrial robots and automation solutions.
- Hugo Byte AI Labs – Research, development, and deployment lab for AI products.
- Stylumia – AI-driven fashion analytics tools for the apparel industry.

➤ Delhi NCR

- Eightfold AI – Talent intelligence and workforce planning using AI.
- Leena AI – Conversational AI for employee experience and HR automation.
- Amantya Technologies – Product engineering and software development company specializing in next-gen technologies.
- Integrated Language Solutions – Provider of comprehensive language services, including translation and localization.
- Technoyuga Soft Pvt. Limited – Web and mobile app development company specializing in AI development services.
- Arramton Infotech Pvt Ltd – Consults, designs, develops, and scales robust web, mobile app, and custom software solutions.

➤ Mumbai (Maharashtra)

- Qure.ai – AI for radiology and diagnostics.
- VideoVerse – AI-powered video editing and live content monetization.
- Niramai Health Analytix – AI-based early-stage breast cancer detection.
- Alemeno – AI-driven supply chain and procurement solutions.
- Monsoon CreditTech – AI-powered credit scoring and lending solutions.
- LearnTube.ai – AI-driven learning platform backed by Google.

➢ **Hyderabad (Telangana)**

- Arya.ai – AI research and development company specializing in deep learning.

- SigTuple – AI-driven healthcare diagnostics platform.

- Uncanny Vision – AI-based computer vision solutions.

- Flutura – AI-powered industrial analytics solutions.

- Bash.ai – AI-driven business automation solutions.

- Niki.ai – AI chatbot for services like bill payments and recharges.

➢ **Pune (Maharashtra)**

- Aindra Systems – AI-based cervical cancer screening solutions.

- Sigtuple – AI-driven healthcare diagnostics platform.

- Flutura – AI-powered industrial analytics solutions.

- Uncanny Vision – AI-based computer vision solutions.

- Bash.ai – AI-driven business automation solutions.

➢ **Chennai (Tamil Nadu)**

- Mad Street Den – AI-powered computer vision and retail analytics.

- Haptik – Conversational AI platform for businesses.

- Flutura – AI-powered industrial analytics solutions.

- Uncanny Vision – AI-based computer vision solutions.

- Bash.ai – AI-driven business automation solutions.

- Niki.ai – AI chatbot for services like bill payments and recharges.

➢ **Kochi (Kerala)**

- SAFI Institute of Advanced Studies – Establishing a Centre of Excellence in AI and Robotics.

➢ **Madurai (Tamil Nadu)**

- Anna University Regional Campus – Hosts the first regional centre of the Tamil Nadu Technology (iTNT) hub, supporting AI and deep tech startups.

➢ **Kanpur (Uttar Pradesh)**

- Startup Incubation and Innovation Centre (SIIC), IIT Kanpur – Incubates over 500 startups, fostering innovation and entrepreneurship.

Famous AI-powered robots

1. **Humanoid / Social Robots**

   - Sophia – Developed by Hanson Robotics. Famous for human-like expressions and conversations.
   - Ameca – Humanoid robot by Engineered Arts, known for realistic facial expressions.
   - Atlas – Boston Dynamics robot for advanced mobility and research.
   - Pepper – SoftBank robot for customer service and retail interactions.
   - Nao – SoftBank's smaller humanoid used in education and research.

2. **Industrial & Service Robots**

   - Spot – Boston Dynamics' quadruped robot used for inspection, security, and industrial monitoring.
   - ASIMO – Honda's humanoid robot for research and mobility assistance.
   - PR2 – Research robot by Willow Garage for AI experiments in manipulation and mobility.

3. **Healthcare & Assistance Robots**

   - TUG – AI-driven hospital robot for medicine and supply delivery.
   - Xenex Germ-Zapping Robot – Uses UV light to disinfect hospitals.
   - Moxi – Assists nurses with routine hospital tasks.

4. **Educational / Companion Robots**

- Cozmo – Small AI robot by Anki for learning and entertainment.
- Vector – AI-powered companion robot with voice and visual recognition.
- Jibo – Social robot designed for families and personal assistant tasks.

5. **Specialized AI Robots**

- Roomba – AI vacuum cleaning robot by iRobot.
- SpotMini – Smaller version of Spot for homes and light tasks.
- Da Vinci Surgical Robot – AI-assisted surgical system for precise operations.
- Sophia 2.0 (next-gen) – Improved humanoid with advanced AI dialogue systems.

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