

Project 177



**Coding
School**



AI and Machine Learning



Cars

AI technology is used in the automotive industry to provide cars that provide safe, efficient and autonomous technology services to drivers.

Self-driving cars can be created using AI and can travel by the crew itself. Also, driver assistance systems (ADAS) support drivers to understand emergencies and respond proactively in risky situations. AI-driven gauge systems and road parking systems and features help with safety and vehicle maintenance, as well as providing options on selected routes.

1. Autonomous Vehicles

- **Objectives:** Using AI technology to drive vehicles autonomously without human intervention. AI continuously analyzes the vehicle's information (road, road, and surrounding vehicles) and trains it to make decisions.
- **Examples:**
 - **Tesla Autopilot:** Automatically guides a vehicle along the route using AI-enabled techniques.
 - **Waymo:** Waymo, a Google-affiliated industrial company, is a company experimenting with AI-powered self-driving systems.

2. Sensors and Computer Vision

- **Objectives:** AI-enabled sensors and vision systems are used to detect the vehicle's surroundings, make quick decisions, and avoid accidents. AI will analyze data from sensors and help make decisions.
- **Examples :**
 - **LiDAR (Light Detection and Ranging):** LiDAR sensors are used to understand internal images of the vehicle's surroundings and make decisions in the vehicle.
 - **Computer Vision:** Driving a vehicle efficiently by recognizing roads, vehicles, people, and other manual information through vehicle cameras and visibility systems.

3. Advanced Driver Assistance Systems (ADAS)

- **Objectives:** AI-powered ADAS system acts as a safety measure to assist the user while driving the vehicle. This is based on vehicle control, lane departure, collision avoidance and high speed vehicle control.
- **Examples:**
 - **Automatic Emergency Braking (AEB):** Automatic stopping of the vehicle to avoid accidents by AI.
 - **Lane-Keeping Assist:** Ensures that the vehicle is correctly on the road.

4. Smart Cruise Control

- **Objectives:** Auto speed control and lane keeping of a vehicle using AI. This method provides more security and convenience to the user.
- **Examples:**
 - **Adaptive Cruise Control:** It uses AI to automatically change the speed of the vehicle based on the information provided by the vehicles in front.
 - **Traffic Jam Assist:** AI makes decisions by examining the vehicle's path, speed, and surrounding vehicles.

5. AI-AI-Powered Infotainment Systems

- **Objectives:** Providing users with automated control and fun systems through an AI assisted system. AI-enabled visual and audio systems, voice controls and GPS systems enhance the in-vehicle experience.
- **Examples:**
 - AI-based GPS and voice control systems: recognize the vehicle's trajectory, voice control modes and offer controls that adapt to the user's environment.
 - **AI Assistant Systems:** In-Vehicle AI Modest User Support and Vehicle Security Verification.

6. Fuel Efficiency and Energy Management Systems

- **Objectives:** Increasing vehicle fuel efficiency and its management using AI techniques. AI analyzes the vehicle's fuel consumption and increases efficiency.
- **Examples:**
 - **AI-Enabled Fuel Management:** Maintain vehicle fuel efficiency and vehicle coverage.
 - **Battery Management Systems for Electric Vehicles (EV):** AI systems to increase energy efficiency for electric vehicles.

AI technology is playing a key role in the automotive industry in improving vehicle safety, autonomous control and user experience.

Machine translations

AI is used for machine translation to automatically translate between languages.

AI uses neural networks and deep learning techniques to grammatically analyze language patterns such as sentence structure, word meaning and punctuation. This translates into deeper understanding and meaning of content, increasing translation accuracy. AI-driven tools, services like Google Translate, provide fast and accurate translations between different languages used in the world.

1. Rule-Based Machine Translation - RBMT

- **Objectives:** Making translation based on sentences using terms and grammar patterns. Here rules are used as a method to translate words correctly.
- **Examples:**
 - **Aptorium:** An AI technique that executes machine transformations based on terms.

2. Statistical Machine Translation - SMT

- **Objectives:** Perform translations based on the context of sentences and word comparisons using past translation data. Here, users' past translation queries are used for translation, along with examples.

- **Examples:**

- Google's SMT (old model): Used as a first step in AI translation techniques, the words in the sentence and the results are processed at high speed

3. Hybrid Machine Translation

- Objective: To perform conversions in conjunction with real-time basis and numerical conversion methods. Here the translation method is implemented based on the study of real foundations and information.

- **Examples:**

- **Systran:** As a hybrid transformation method, real and numerical methods are combined to create transformations.

4. Phrase-Based Machine Translation

- Objective: To make the root translator with word probabilities in sentences. Here the appropriate terms are searched and translated to create the relevant sentences.

- **Examples:**

- **Moses SMT:** AI is used for translation with word and sentence probabilities.

5. Neural Machine Translation - NMT

- Objective: Using AI-based Neural Networks methods for translation, correct translation of sentence context and related sentences. Translations by NMT are often interesting and qualitative.

- **Examples:**

- **Google Translate (Neural-based Version):** The Google NMT method provides users with sentence context and translations to help them understand.
- **Deep L Translator:** As an AI-based engagement translation method, Deep L delivers high results for translation.

6. Natural Language Processing – NLP

Objective: Using artificial intelligence as a context and sentence grammar in translation using NLP. AI develops translations based on the understanding and accurate translation of the sentence.

- **Examples:**
 - **Microsoft Translator:** An NLP AI technique translates sentences and context accurately.
 - **Amazon Translate:** A commercial translation tool that implements AI and NLP based translation processes.

7. Post-Editing Machine Translation - PEMT

- Objective: Using AI techniques to improve translation quality, provide users with confirmation of translations, and make translations more accurate.
- **Examples:**
 - **SDL Trados Studio:** An AI-enabled software to improve conversions.

Fighting disinformation

AI-enabled machine translation methods are used based on correctly generating and understanding sentences and understanding context. Using AI has shown exceptional results in defeating disinformation, identifying and controlling misinformation spread on the Internet.

It uses AI-driven machine learning and language parameters to identify content that contains false information. Analyzes breaking news, social media messages, and curious information over time and assesses its accuracy and veracity. AI systems are used for fact-checking and querying reliable content, which makes it easier to avoid fake news and provide the best information to consumers.

Below are the details of the AI based methods implemented against malicious news and disinformation.

1. Natural Language Processing - NLP

- **Objective:** To investigate disputed news and fake news reports using NLP as an AI technique. NLP can identify words and sentence patterns in social media and news reports, and help spot false information.
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- **Examples:**
 - **Fact Mata:** Based on NLP and AI, Fact Mata is used to report fake news and disinformation.

2. Image and Video Analysis

- **Objectives :** Using AI-enabled visual analysis techniques to identify false visual information and determine whether that visual information is real. This increases the ability to detect fake visual ad videos and photos.
- **Examples:**
 - **Truepic:** Analysis of visual data using AI methods helps identify news with fake visuals.
 - **Microsoft's Video Authenticator:** An AI-enabled video analysis tool created by Microsoft, a technology that helps identify fake videos and Deepfakes.

3. Machine Learning and Pattern Recognition

- **Objectives :** Pattern discovery of old and new news using AI techniques to more effectively identify fake news reports and corruption. Machine Learning will increase the ability to study news and identify fake news and propaganda.
- **Examples:**
 - **Facebook's AI Tools:** Facebook uses AI to analyze news and campaign information and identify fake news.
 - **Google Fact Check Tools:** Google uses AI-enabled tools that analyze news reports and opinions to identify them.

4. Social Media Disinformation Control

- **Objective:** To control the spread of false information through social media traffic. AI methods are used to monitor users' fake news spreading behavior and disable them.
- **Examples :**
 - **Twitter AI Systems:** Twitter uses AI-enabled systems to detect and control misinformation and corruption.
 - **YouTube AI Moderation:** YouTube offers an AI-powered functionality to monitor and remove fake videos.

5. Fact-Checking AI Systems

- **Objective:** Using AI to identify false information and fake news and discover the truth about that information. This helps users to identify true and false information.
- **Examples:**
 - **Snopes AI Fact-Checking:** Snopes AI detects and verifies false information in news and reports.
 - **PolitiFact AI:** PolitiFact is AI-enabled and used to spot fake information.

6. Deepfake Detection

- **Objective:** Identify and control Deepfake videos using AI methods. Deepfake technology offers a greater degree of intentionality in detecting the faking of human faces or speech.

- **Examples:**

Sensity AI: Sensity uses an AI method to detect deepfakes.

AI technology is playing a powerful role in the fields of information reporting, fake news control and detection of deepfake reports.