

Glossary of Technical Terms

Following the detailed explanations, we provide a glossary, ensuring readers have a reference to demystify technical jargon and reinforce their understanding

Glossary of AI Models Categorised:

1. Broad AI Applications:

- ▶ Natural Language Processing (NLP): AI that processes and generates human language, facilitating understanding and communication between humans and machines.
- ▶ Visual Perception uses AI systems to process and interpret visual information, enabling tasks such as image recognition and computer vision.
- ▶ Automatic Programming: AI that generates code autonomously, streamlining software development processes.
- ▶ Knowledge Representation: How AI systems structure and use knowledge to make informed decisions and predictions.
- ▶ Automatic Reasoning is the capability of AI systems to apply logical reasoning to solve problems, deduce new information, or make decisions.
- ▶ Intelligent Robotics: The application of AI in robots enhances their ability to perceive, learn, make decisions, and carry out tasks autonomously.

2. Machine Learning (ML):

- ▶ Linear/Logistic Regression: Techniques for predicting numerical outcomes or categorising data into classes.
- ▶ K-Means Clustering: A method for partitioning data into distinct groups based on similarities.

- ▶ **Principal Component Analysis (PCA):** A statistical approach to simplifying data by reducing dimensions.
- ▶ **Random Forest:** An ensemble learning technique that builds multiple decision trees for better predictions and classification.
- ▶ **Support Vector Machines (SVM):** A supervised learning algorithm for classification and regression tasks.
- ▶ **K-Nearest Neighbours (KNN):** An approach that categorises data instances by considering the closeness or similarity of neighbouring data points within the multidimensional attribute space.

3. Deep Learning:

- ▶ **Convolutional Neural Networks (CNNs):** Deep learning architectures optimised for analysing visual imagery.
- ▶ **Recurrent Neural Networks (RNNs):** A category of neural networks well-suited for processing sequential data and modelling temporal dependencies, finding applications in various domains. These applications encompass fields like understanding and generating human language, accurately transcribing spoken words into text, and analysing and predicting patterns in data sequences collected over time.

4. Generative AI:

- ▶ **Generative Adversarial Networks (GANs)** are artificial intelligence (AI) architectures that employ a pair of neural networks engaged in an adversarial process. In this process, the networks rival each other to create novel, realistic, and diverse outputs, such as images, text, or other forms of data, leading to the generation of previously unseen content.

5. Applications:

- ▶ **Applications (Facade and Interior Spaces):** The interactive layer where users engage with AI, including the user interface and underlying operational tools.

Supporting Systems:

- ▶ **Networking Bandwidth:** The communication pathways allow swift data transfer within AI systems.
- ▶ **Security Measures:** The protocols and systems that safeguard AI operations from cyber threats.
- ▶ **Disaster Recovery and Data Redundancy:** The contingency plans ensuring AI systems can recover from disruptions.
- ▶ **Energy Efficiency:** Practices that ensure AI systems use energy effectively, balancing power and sustainability.
- ▶ **Network Security and Compliance:** Measures to ensure AI operations comply with regulatory standards.
- ▶ **Edge Computing:** Data processing is done near the source to enhance speed and efficiency.
- ▶ **Modular Infrastructure:** Adaptable systems that can evolve with the business needs.
- ▶ **Vendor Support and Warranties:** The assurance of support and service guarantees from hardware providers.

AI Concepts:

- ▶ **Vision AI:** Enables machines to process and understand visual information.
- ▶ **Natural Language Processing (NLP):** Allows computers to comprehend and generate human language.