

AI Techniques and Applications

Category: Artificial Intelligence in Education

AI techniques and applications refers to the main computational approaches used to perform tasks associated with artificial intelligence and the contexts in which they are applied. Techniques transform data or encoded knowledge into classifications, predictions, recommendations, generated content or actions; applications place those techniques within a practical system.

Understanding technique families helps users avoid treating all AI as the same. A method suitable for image recognition may not suit causal explanation or a high-stakes decision, and similar interfaces may conceal very different models, data and performance characteristics ([Russell & Norvig, 2021](#)).

Technique Families

1. **Symbolic methods:** Use explicit rules, logic, knowledge representations and search to solve structured problems.
2. **Supervised learning:** Learn from labelled examples to classify cases or predict values.
3. **Unsupervised learning:** Identify patterns, clusters or representations in data without predefined labels.
4. **Deep learning:** Use multilayer neural networks for complex language, vision, speech and pattern-recognition tasks.
5. **Generative and reinforcement methods:** Generate new content or learn actions through feedback from an environment.

Examples in Practice

A research team categorising thousands of survey comments might compare a rule-based keyword method, a supervised classifier and a language model. Each offers different requirements and risks. The team should select a method against explicit criteria, validate it on representative comments and retain human review for ambiguous cases.

Why It Matters

Technique-level knowledge supports proportionate evaluation. It helps students ask what evidence a system uses, what kind of error is likely and whether the application matches the task. UNESCO treats this understanding as a foundation for moving from informed use towards responsible creation ([Miao et al., 2024](#)).

Further Reading

6. Miao, F., Shiohira, K., & Lao, N. (2024). [AI competency framework for students](#). UNESCO.
7. Russell, S. J., & Norvig, P. (2021). [Artificial Intelligence: A Modern Approach](#) (4th ed.). Pearson.
8. Goodfellow, I., Bengio, Y., & Courville, A. (2016). [Deep Learning](#). MIT Press.

Related Terms: AI Foundations and Applications | Machine Learning | Deep Learning | Generative AI