Chapter 9 Learning Principles And Applications

Learning g. Some learning is immediate, induced by a single event (e. The ability to learn is possessed Learning is the process of acquiring new understanding, knowledge, behaviors, skills, values, attitudes, and preferences. being burned by a hot stove), but much skill and knowledge accumulate from repeated experiences. The changes induced by learning often last a lifetime, and it is hard to distinguish learned material that seems to be "lost" from that which cannot be retrieved. Learning is the process of acquiring new understanding, knowledge, behaviors, skills, values, attitudes, and preferences. The ability to learn is possessed by humans, non-human animals, and some machines; there is also evidence for some kind of learning in certain plants d10dc35105

Statistics and mathematical optimisation (mathematical programming) methods comprise the foundations of... d10dc35105 Reinforcement learning differs from supervised learning in not needing labelled input-output pairs to be presented, and in not needing sub-optimal actions to be explicitly corrected. Instead, the focus is on finding a balance between exploration (of uncharted territory) and exploitation (of current knowledge) with the goal of maximizing the cumulative reward (the feedback of which might be incomplete or delayed). The search for this balance is... d10dc35105

Action learning The theory of Action Learning and its epistemological position were originally developed by Reg Revans, who applied the method to support organizational and business development initiatives and improve on problem solving efforts. Action Learning more precise in the opening chapter of his book which describes that "learning" is the result of combining "programmed knowledge" and "questioning" Action Learning is an approach to problem solving that involves taking action and reflecting upon

the results. This method is purported to help improve the problem-solving process and simplify the solutions developed as a result d10dc35105

Machine learning Within a subdiscipline in machine learning, advances in the field of deep learning have allowed neural networks, a class of statistical algorithms, to surpass many previous machine learning approaches in performance. Machine learning (ML) is a field of study in artificial intelligence concerned with the development and study of statistical algorithms that can learn Machine learning (ML) is a field of study in artificial intelligence concerned with the development and study of statistical algorithms that can learn from data and generalise to unseen data, and thus perform tasks without explicit instructions d10dc35105

A neural network consists of connected units or nodes called artificial neurons, which loosely model the neurons in the brain. Artificial neuron models that mimic biological neurons more closely have also been recently investigated and shown to significantly improve performance. These

are connected by edges, which model the synapses in the brain. Each artificial neuron receives signals from connected neurons, then processes them and sends a signal to other connected neurons. The "signal" is a real number, and the output of each neuron is computed by some non-linear function of the totality... d10dc35105

Deep learning The field takes inspiration from biological neuroscience and is centered around stacking artificial neurons into layers and "training" them to process data. In machine learning, deep learning focuses on utilizing multilayered neural networks to perform tasks such as classification, regression, and representation In machine learning, deep learning focuses on utilizing multilayered neural networks to perform tasks such as classification, regression, and representation learning. Methods used can be supervised, semi-supervised or unsupervised. The adjective "deep" refers to the use of multiple layers (ranging from three to several hundred or thousands) in the network d10dc35105

Project-based learning It is a style of active

learning and inquiry-based learning. Students learn about a subject by working for an extended period of time to investigate and respond to a complex question, challenge, or problem. Project-based learning contrasts with paper-based, rote memorization, or teacher-led instruction that presents established facts or portrays a smooth path to knowledge by instead posing questions, problems, or scenarios. proponents of project-based education or at least its principles through his idea of "learning by doing". In My Pedagogical Creed (1897) Dewey enumerated Project-based learning is a teaching method that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems d10dc35105

Principles of learning These principles have been discovered, tested, and applied in real-world scenarios and situations. Edward Thorndike developed the first three "Laws of learning": readiness, exercise, and effect. They provide additional insight into what makes people learn most effectively. These principles have Researchers in the field of

educational psychology have identified several principles of learning (sometimes referred to as laws of learning) which seem generally applicable to the learning process. several principles of learning (sometimes referred to as laws of learning) which seem generally applicable to the learning process d10dc35105

Team-based learning learning (TBL) is a collaborative learning and teaching strategy that enables people to follow a structured process to enhance student engagement and Team-based learning (TBL) is a collaborative learning and teaching strategy that enables people to follow a structured process to enhance student engagement and the quality of student or trainee learning. Team-based learning methodology can be used in any classroom or training sessions at school or in the workplace. The term and concept was first popularized by Larry Michaelsen, the central figure in the development of the TBL method while at University of Oklahoma in the 1970s, as an educational strategy that he developed for use in academic settings, as in medical education d10dc35105

Action Learning is effective in developing a number of individual leadership and team problem-solving skills, and has become a component in many corporate and organizational leadership development programs. The strategy is advertised as being different from the "one size fits all" curricula that are characteristic of many training and development... d10dc35105 Behaviorists look at learning as an aspect of conditioning and advocating a system of rewards and targets in education. Educators who embrace cognitive theory believe that the definition of learning as a change in behaviour is too narrow, and study the learner rather than their environment—and in particular the complexities of human memory. Those who advocate constructivism believe that a learner's ability to learn relies largely on what they already know and understand, and the acquisition of knowledge... d10dc35105 ML finds application in many fields, including natural language processing, computer vision, speech recognition, email filtering, agriculture, and medicine. The application of ML to business problems is known as predictive analytics. d10dc35105 Some common deep learning network architectures include

fully connected networks, deep belief networks, recurrent neural networks, convolutional neural networks, generative adversarial networks, transformers, and neural radiance fields. These architectures have been applied to fields... d10dc35105

Reinforcement learning Reinforcement learning is one of the three basic machine learning paradigms, alongside supervised learning and unsupervised learning. Reinforcement learning is one of the three basic machine learning paradigms, alongside supervised learning and unsupervised learning. Reinforcement learning differs Reinforcement learning (RL) is an interdisciplinary area of machine learning and optimal control concerned with how an intelligent agent should take actions in a dynamic environment in order to maximize a reward signal d10dc35105

Neural network (machine learning) data sets, and adapt to various types of applications. Their evolution over the past few decades has been marked by a broad range of applications in fields In machine learning, a neural network (also artificial neural network or neural net, abbreviated ANN or NN) is a computational model

inspired by the structure and functions of biological neural networks d10dc35105

Learning theory (education) Cognitive, emotional, and environmental influences Learning theory attempts to describe how students receive, process, and retain knowledge during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding, or a worldview, is acquired or changed and knowledge and skills retained. Learning theory attempts to describe how students receive, process, and retain knowledge during learning d10dc35105

Human learning starts at birth (it might even start before) and continues until death as a consequence of ongoing interactions between people and their environment. The nature and processes involved in learning... d10dc35105

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