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Sommario/riassunto

"Due to its powerful nonlinear mapping and distribution processing capability, deep neural networks based machine learning technology is being considered as a very promising tool to attack the big challenge in wireless communications and networks imposed by the explosively increasing demands in terms of capacity, coverage, latency, efficiency (power, frequency spectrum and other resources), flexibility, compatibility, quality of experience and silicon convergence. Mainly categorized into the supervised learning, the unsupervised learning and the reinforcement learning, various machine learning algorithms can be

used to provide a better channel modelling and estimation in millimeter and terahertz bands, to select a more adaptive modulation (waveform, coding rate, bandwidth, and filtering structure) in massive multiple-input and multiple-output (MIMO) technology, to design a more efficient front-end and radio-frequency processing (pre-distortion for power amplifier compensation, beamforming configuration and crest-factor reduction), to deliver a better compromise in self-interference cancellation for full-duplex transmissions and device-to-device communications, and to offer a more practical solution for intelligent network optimization, mobile edge computing, networking slicing and radio resource management related to wireless big data, mission critical communications, massive machine-type communications and tactile internet"--