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(57) Abstract :
The invention discloses a method for improved error correction in digital communication systems comprising a data input (101), encoder unit (102), channel estimator (103), error detection unit (104), hybrid redundancy controller (105), decoder unit (106), and output data (107). The method integrates adaptive error correction, real-time channel estimation, and hybrid redundancy mechanisms to minimize retransmissions and reduce energy consumption. Predictive redundancy ensures proactive error resilience. This invention enhances communication reliability across diverse applications, including IoT, 5G, and satellite networks, ensuring high efficiency and robustness under varying channel conditions.

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