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(57) Abstract :
The invention discloses a system for smart antenna beamforming in next-generation wireless networks, comprising an antenna array (101), adaptive RF front-end (102), signal processing module (103), AI-based control unit (104), and reconfigurable beamforming network (105). The system dynamically adapts radiation patterns to optimize coverage, enhance spectrum efficiency, and reduce interference. AI algorithms predict user mobility, enabling seamless connectivity and improved quality of service. Experimental validation shows improved throughput, reduced latency, and significant energy efficiency, making the invention suitable for 5G, 6G, and beyond wireless applications.

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