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(71)**Name of Applicant :**
**1)NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY**
Address of Applicant :19, Knowledge Park-II, Institutional Area, Greater Noida – 201306, Uttar Pradesh, India. Uttar Pradesh India
(72)**Name of Inventor :**
**1)Dr. PRASANNA KUMAR SINGH**
**2)JAYA NIDHI VASHISHTHA**

(57) Abstract :
The invention discloses a system for adaptive signal coding in 5G networks comprising a channel estimator (101), adaptive coding engine (102), AI prediction module (103), cross-layer controller (104), and output transmitter (105). The system dynamically adapts coding schemes based on real-time channel conditions, predictive analysis, and cross-layer QoS requirements. It achieves improved throughput, lower latency, higher reliability, and energy-efficient operation across diverse 5G scenarios, including eMBB, URLLC, and mMTC. The system further ensures backward compatibility with existing 5G standards.

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