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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)VIVEK KUMAR SHARMA
2)SHAMSHAD ALI

(57) Abstract :
An AI driven system for automated software test case generation includes an artifact ingestion engine (101), a semantic interpretation engine (102), a program structure analyzer (103), a scenario synthesis engine (104), a coverage scoring engine (105), an output composer (106), a feedback memory store (107), and an integration interface (108). Development artifacts are normalized, semantically interpreted, structurally analyzed, and transformed into ranked candidate scenarios. Selected scenarios are converted into machine actionable test definitions with traceability metadata, thereby improving relevance, coverage focus, and adaptive validation preparation for evolving software environments.

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