(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :17/10/2025
(21) Application No.202511100546 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : AN AI-BASED FRAMEWORK FOR AUTOMATED CLOUD RESOURCE OPTIMIZATION

(51) International classification	:G06F0009500000, B62D0025140000, H04L0041122000, H04L0041083300, G06Q0010063100
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention discloses an AI-based framework for automated cloud resource optimization, comprising predictive module (101), allocation engine (102), cross-cloud orchestration module (103), sustainability module (104), intelligent dashboard (105), monitoring unit (106), and feedback loop (107). The predictive module forecasts workloads, while the allocation engine provisions resources dynamically. Cross-cloud orchestration balances workloads across providers, and the sustainability module minimizes energy consumption. The intelligent dashboard provides actionable insights and anomaly detection. The invention achieves cost efficiency, performance scalability, and sustainability in multi-cloud and hybrid environments.

No. of Pages : 15 No. of Claims : 6