(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :01/12/2025
(21) Application No.202541119623 A
(43) Publication Date : 26/12/2025

(54) Title of the invention : MATHEMATICAL HYPER-HEURISTIC OPTIMIZATION FRAMEWORK FOR SCHEDULING PROBLEMS

(51) International classification	:G06N 20/00, G06Q 10/06, G06N 5/02, G06N 5/04, G06N 99/00
(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

(71)**Name of Applicant :**
1)THE REGISTRAR
Address of Applicant :Vels Institute of Science, Technology and Advanced Studies (VISTAS), Velan Nagar, PV Vaithiyalingam Road, Pallavaram, Chennai, Tamil Nadu, India. Chennai Tamil Nadu India
(72)**Name of Inventor :**
1)Dr. SANDHIYA
2)J. JEYANTHI
3)S. NIVEDHA
4)I.IGNO MARY
5)KIRUBHA. G
6)G.DHANALAKSHMI

(57) Abstract :
The present invention relates to the development of the Mathematical Hyper-Heuristic Optimization Framework for Scheduling Problems presents a flexible, advanced, and 5 effective means of solving complex scheduling problems across many different application areas. Traditional metaheuristics often require significant tuning of parameters and customizations for specific applications, both of which limit their scalability and the ability to deliver optimal solutions. The proposed hyper-heuristic framework is able to overcome these limitations by operating at a higher level compared to conventional metaheuristics. Instead of 10 relying on user-defined parameters for the selection, combination, and evolution of low-level heuristics, this concept applies mathematically grounded decision models to accomplish these tasks. The framework combines ideas from reinforcement learning, statistical learning, and combinatorial optimization to allow for dynamic evaluation of the performance of the selected heuristic and facilitate the search for the globally optimal schedule. Feature-driven 15 rankings of heuristics, adaptive acceptance criteria, and multi-objective performance metrics are used to substantially improve solution quality, convergence speed, and computational stability of the resulting system. This new methodology offers a unified and flexible model that minimizes reliance upon individual algorithms and maximizes the ability to produce efficient scheduling solutions in highly constrained, uncertain and large systems. 20 FIG.1

No. of Pages : 14 No. of Claims : 1