Literature Review: Evolutionary Scheduling of Courses or Work Shifts

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Abstract

Write a short summary (150–200 words) describing the focus of your literature review — evolutionary approaches to scheduling (courses or work shifts), time frame (from 2021 onward), and main themes.

1 Introduction

Introduce the general topic of scheduling problems (courses, shifts), motivation, why evolutionary algorithms are suitable, and what this review aims to achieve.

2 Older Trends in Scheduling Research

2.1 Older Publications

Here are details of older key papers:
1. Application of Evolutionary Algorithms in Project Management
   Authors/Year: Christos Kyriklidis and Georgios Dounias (2014)
   Problem Type: Resource Leveling Problem
   (Time-Constrained Project Scheduling)
   Dataset / Instances: Small and medium benchmark projects
   from public project datasets (e.g., PSPLIB)
   Evaluation Method / Metrics: Objectives include maximum
   resource usage (Gf),
   resource leveling index (RLI), and standard deviation (StD); 50 runs

with statistical evaluation of near-optimality
Algorithm Type: Genetic Algorithm (GA)
Encoding / Individual Design: Chromosome encodes start-times of non-critical activities; critical ones fixed
Operators: Two-point crossover (70%), mutation (20%), elitism (10%);
local search around elite chromosomes to avoid premature convergence
Comparison Methods: Exhaustive enumeration for small problems; compared with heuristic, ACO, ANN, and PSO methods
Key Findings: GA efficiently finds near-optimal resource profiles, outperforming traditional methods and scaling well for large projects
Citation Count (to date): 9 (Google Scholar, 2025)

3 Recent Trends in Scheduling Research (2021 − Now)

Here are details of key papers from 2021:

1. Paper 2
   Authors/Year:
   Problem Type:
   Dataset / Instances:
   Evaluation Method / Metrics:
   Algorithm Type:
   Encoding / Individual Design:
   Operators:
   Comparison Methods:
   Key Findings:
   Citation Count (to date):

References