

Table 1

Title	Year	Country	Scenario	Technique	Improvement	maturity
A Spatial Decision Support System for Prioritizing Repair Interventions on Power Network: High	2023	Italy	Network maintainance crew assignment	Software system, Python Library:CS, math model and analysis	time and holistic cost	High: reak life experiment
Experimental Verification on Human-Centric Network-Based Resource AllocationApproaches for Process-Aware Information System	2022	Korea	An Italian software company help desk data set about tickting management	Based on human-centric networks obtained by mining event logs, math model and analysis	Not specified	medium: very detailed real life expriment but without stating improvement in numbers
Group-Oriented Task Allocation for Crowdsourcing in Social Networks	2021	China	data set extracted from Github	Group-oriented task allocation Algorithm written in Java programming :CS, math model and analysis and pseudo code	2x~3x higher synergy value, circa the same consistency value, ~1/4x less conflict value, ~1.8x skill coverage rate	medium: this article assumes some predefined conditions such as the group is fixed during allocation and execution
A Disruptive Decision Support Platform for Reengineering the Strategic Transfer of Employees	2021	Slovenia	Public organisation with 3000 employees and 235, redeployment of employees	web-based DSS IDAM (Decision support system & Identify and Access Management):CS, math model and analysis	transferring time saved 82.69%; the operational costs decreased by 87.64%	High: real life experiment with documentations
Enabling Workforce Optimization in Constrained Attribute-Based Access Control Systems	2022	India	1000 users experiment	Algorithm writting in python programming language:CS, math and pseudo code	Not specified	Medium: not a real life experiment, no comparison
Multi-Skills Resource Constrained and Personality Traits Based Project Scheduling	2022	China	8 experiments within Software Project with different parameters, but not specified they are real-life expriments of pseudo	math and Algorithm in pseudo code: Algo	Baseline: 62% of the project are completed earlier; Number of activities: 37 of 50 projects are better, 0.54 free resource compared to 2.15; impact of resources: 26.4 vs 36.48 completion time, 43 of 50 earlier; number of skills required: 39.03 vs 44.34 completion time, 44 of 50 earlier; number of maximum predecessors and successors: 47.98 days vs 50.72 days, 36 of 50 better; duration of activities: 41.85 vs 45.56 completion time, 35 of 50 earlier	High: very detailed and comprehensive experiments

Title	Year	Country	Scenario	Technique	Improvement	maturity
Team Formation for Human-Artificial Intelligence Collaboration in the Workplace: A Goal Programming Model to Foster Organizational Change	2023	Italy	Numerical models with different requirements, not real life experiment	Goal Programming, Numerical analysis	Not specified	Medium: not a real life experiment, no comparison
Supervised machine learning to allocate emergency department resources in disaster situations	2022	Morocco	Human resource allocation in disaster situation, no real life experiment, only calculated performance indicator	Supervised machine learning: cs and math	Not specified	low
Research on the optimization of rural e-commerce human resources based on big data	2021	China	Rural e commerce human resource allocation, experiment carried on the biggest local rural e-commerce company	Data mining and big data analysis: math	Higher human resource data accuracy and higher human resource allocation rationality	medium
Dynamic Resource Allocation Considering Ergonomics in Intralogistics	2021	Germany	human resource allocation considering ergonomic burden	Mathematical model: math	Not specified	low
An Enterprise Human Resource Allocation Management Model Based on CMMI	2021	China	general enterprise, computer simulation	Mathematical Model and linear programming: math	Not specified	low
Human Resource Allocation Method Based on Multi Objective Optimization	2021	China	general, computer simulation	Mathematical model and genetic algorithm: model	Graph is not explained clearly	low
PM4SOS: low-effort resource allocation optimization in a dynamic environment	2022	Brazil	hospital surgery scheduling including operating room, surgeon with computer simulation and real life experiment at hospital	Genetic algorithm and framework programmed in Python, event log to extract data:CS, pseudo code, math model	occupancy 10% and 25% increased and number of surgeries 12->16, 11->18	medium
Research on dynamic allocation of human resources based on Improved Ant Colony Optimization	2021	China	general enterprise scenario	Improved Ant colony algorithm optimization: math	More balanced distribution and more distribution efficiency->24% and 45% improvement compared to other 2 referenced methods	medium
Program for the Task Allocation Model: Integrating Workforce Planning for Manpower Utilization at City of Cabuyao Engineering Office	2022	Philippines	City engineering office manpower scheduling	Analysis: Interview, questionnaire, flowchart, SWOT Diagram, math analysis of data; Visual Basic Application:CS	Not specified	medium

Title	Year	Country	Scenario	Technique	Improvement	maturity
Human Resource Allocation to the Credit Requirement Process, A Process Mining Approach	2022	Iran	Banking industry	Process Mining and computer simulation:CS, math model	Is able to determine and solve the bottleneck which other studies don't	medium
Human Resource Intelligent Scheduling Algorithm Based on Decision Tree Algorithm	2022	China	general, but simulations are carried on a enterprise team, a e-government project team and a campus team	Decision tree algorithm and math model	~around 25% improvement regarding scheduling cycle shortening, 28~35% cost reduction rate improvement	medium, because the experiment is not explained well enough, e.g what tasks, what constraint etc
Research on Software Project Scheduling Based on Genetic Algorithm	2021	China	general	Genetic Algorithm pseudo code and math model	Not specified	low, no simulation or real life experiment
Why didn't you allocate this task to them?' Negotiation-Aware Task Allocation and Contrastive Explanation Generation	2023	US	general	math model		
Summary:	2021:8; 2022: 10; 2023: 2	China: 10; Italy: 2; Iran: 1; Korea: 1; Slovenia: 1; India: 1; Brazil: 1; Philipines: 1; Morocco: 1; Germany: 1;	With specific experiment: 11; general: 9	Computer software: 8 Only math model and algorithm: 11	Not specified: 9 3 Quantitative: 7	High: 3 Medium: 10 Low: 5

Title	Private/Public	Additional Info
A Spatial Decision Support System for Prioritizing Repair Interventions on Power Network: High		
Experimental Verification on Human-Centric Network-Based Resource AllocationApproaches for Process-Aware Information System	private	
Group-Oriented Task Allocation for Crowdsourcing in Social Networks	private	
A Disruptive Decision Support Platform for Reengineering the Strategic Transfer of Employees	public	
Enabling Workforce Optimization in Constrained Attribute-Based Access Control Systems	private/public	Employee Replacement problem, not so relevant but interesting work
Multi-Skills Resource Constrained and Personality Traits Based Project Scheduling	private/public	

Title	Private/Public	Additional Info
Team Formation for Human-Artificial Intelligence Collaboration in the Workplace: A Goal Programming Model to Foster Organizational Change		
Supervised machine learning to allocate emergency department resources in disaster situations	public/government	This paper introduces machine learning approach not only for human resource, but also material allocation under disaster situation
Research on the optimization of rural e-commerce human resources based on big data	private	
Dynamic Resource Allocation Considering Ergonomics in Intralogistics		No comprehensive data and experiment, but still interesting topic regarding ergonomic burden in business process
An Enterprise Human Resource Allocation Management Model Based on CMMI		
Human Resource Allocation Method Based on Multi Objective Optimization		
PM4SOS: low-effort resource allocation optimization in a dynamic environment		This article is not only about human resource allocation, but also other resources like operating room. Its fair to say that human and material resources allocation are always closely coupled
Research on dynamic allocation of human resources based on Improved Ant Colony Optimization		
Program for the Task Allocation Model: Integrating Workforce Planning for Manpower Utilization at City of Cabuyao Engineering Office		

Title	Private/Public	Additional Info
Human Resource Allocation to the Credit Requirement Process, A Process Mining Approach	The screnarios simulated are not explained well	
Human Resource Intelligent Scheduling Algorithm Based on Decision Tree Algorithm	public/private	
Research on Software Project Scheduling Based on Genetic Algorithm		
Why didn't you allocate this task to them?' Negotiation-Aware Task Allocation and Contrastive Explanation Generation		
Summary:		