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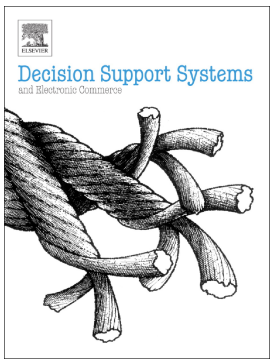

A Decision Maxim for Efficient Task Realization within Analytical Network Infrastructures

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A Decision Maxim for Efficient Task Realization within Analytical Network Infrastructures

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Abstract

Faced with the increasing needs of companies, optimal dimensioning of IT hardware is becoming challenging for decision makers. In terms of analytical infrastructures, a highly evolutionary environment causes volatile, time-dependent workloads in its components, and intelligent, flexible task distribution between local systems and cloud services is attractive. With the aim of developing a flexible and efficient design for analytical infrastructures, this paper proposes a flexible architecture model, which allocates tasks following a machine-specific decision heuristic. A simulation benchmarks this system with existing strategies and identifies the new decision maxim as superior in a first scenario-based simulation.

Keywords: Analytics, Architecture Concepts, Cyber-Physical Systems, Internet of Things, Task Realization Strategies, Simulation

1. Introduction

Faced with an increase in the complexity of company IT infrastructures, such as an increasing number of networked machines and their heterogeneity in hardware and software (Polyvyanyy et al. (2017)), companies are often chal-

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