

Cloud Computing Task Scheduling Problem by Nondominated Sorting Genetic Algorithm II (NSGA-II)

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Abstract

Cloud computing is applied in wireless sensor networks (WSNs) by dispersing large-scale computations across multiple distributed resources. Cloud computing task scheduling has been a long-standing issue in ascertaining the quality, accessibility, accuracy, and capability of WSNs. In order to achieve a well-organized solution to the bi-objective time-constrained task scheduling problem, the Nondominated Sorting Genetic Algorithm II (NSGA-II) has been developed. Additionally, The NSGA-II addresses the problem of task scheduling by experimenting. The study results demonstrate that NSGA-II can successfully achieve this study's objective.

Keywords

Efficiencies, Timeframe, Nondominated Sorting Genetic Algorithm II (NSGA-II), Cloud computing, Wireless sensor networks (WSNs)

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Biographies

Wei-Chang Yeh is currently a chair professor of the Department of Industrial Engineering and Engineering Management at National Tsing Hua University in Taiwan. He received his M.S. and Ph.D. from the Department of Industrial Engineering at the University of Texas at Arlington. Most of his research is focused around algorithms, including exact solution methods and soft computing. He has published more than 250 research papers in highly ranked journals and conference papers and has been awarded the Outstanding Research Award twice, the Distinguished Scholars Research Project once, and an Overseas Research Fellowship twice by the Ministry of Science and Technology in Taiwan. He has been invited to serve as an Associate Editor of the two top reliability related journals, namely, the IEEE Transactions on Reliability and Reliability Engineering & System Safety. He proposed a novel soft computing algorithm called the simplified swarm optimization (SSO) and demonstrated the simplicity, effectiveness, and efficiency of his SSO for solving NP-hard problems. He has been granted 50 patents and earned an International Fellow, the Guoguang Invention Medal as well as the titles of Outstanding Inventor of Taiwan and Doctor of Erudition, by the Chinese Innovation and Invention Society.

Wenbo Zhu is Ph.D., master tutor, member of Cognitive System and Information Processing Professional Committee of Chinese Association for Artificial Intelligence, Deputy Secretary General of Foshan Artificial Intelligence Society, currently working at Foshan University, has presided over and participated in a number of important national, provincial and ministerial scientific research projects, mainly engaged in pattern recognition, affective computing, neuroevolution, deep learning and other artificial intelligence algorithm research and related equipment research and development. At this stage, I and my team undertake the design tasks of industrial visual inspection, medical image analysis, emotion analysis, LoRa-based wireless sensor network and other intelligent identification application systems, including cooperation with Kailuan Group to develop intelligent coal gangue sorting, research and development of automated

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