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METAHEURISTICS IN WATER, GEOTECHNICAL AND TRANSPORT ENGINEERING

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Metaheuristics In Water Geotechnical And Transport Engineering Elsevier Insights

**Xin-She Yang, Siamak Talatahari, Amir
Hossein Alavi**



Metaheuristics In Water Geotechnical And Transport Engineering Elsevier Insights:

Metaheuristics in Water, Geotechnical and Transport Engineering Xin-She Yang, Siamak Talatahari, Amir Hossein Alavi, 2012-12-31 Due to an ever decreasing supply in raw materials and stringent constraints on conventional energy sources demand for lightweight efficient and low cost structures has become crucially important in modern engineering design This requires engineers to search for optimal and robust design options to address design problems that are often large in scale and highly nonlinear making finding solutions challenging In the past two decades metaheuristic algorithms have shown promising power efficiency and versatility in solving these difficult optimization problems This book examines the latest developments of metaheuristics and their applications in water geotechnical and transport engineering offering practical case studies as examples to demonstrate real world applications Topics cover a range of areas within engineering including reviews of optimization algorithms artificial intelligence cuckoo search genetic programming neural networks multivariate adaptive regression swarm intelligence genetic algorithms ant colony optimization evolutionary multiobjective optimization with diverse applications in engineering such as behavior of materials geotechnical design flood control water distribution and signal networks This book can serve as a supplementary text for design courses and computation in engineering as well as a reference for researchers and engineers in metaheuristics optimization in civil engineering and computational intelligence Provides detailed descriptions of all major metaheuristic algorithms with a focus on practical implementation Develops new hybrid and advanced methods suitable for civil engineering problems at all levels Appropriate for researchers and advanced students to help to develop their work

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Engineering Xin-She Yang, Amir Hossein Gandomi, Siamak Talatahari, Amir Hossein Alavi, 2012-09 Due to an ever decreasing supply in raw materials and stringent constraints on conventional energy sources demand for lightweight efficient and low cost structures has become crucially important in modern engineering design This requires engineers to search for optimal and robust design options to address design problems that are often large in scale and highly nonlinear making finding solutions challenging In the past two decades metaheuristic algorithms have shown promising power efficiency and versatility in solving these difficult optimization problems This book examines the latest developments of metaheuristics and their applications in water geotechnical and transport engineering offering practical case studies as examples to demonstrate real world applications Topics cover a range of areas within engineering including reviews of optimization algorithms artificial intelligence cuckoo search genetic programming neural networks multivariate adaptive regression swarm intelligence genetic algorithms ant colony optimization evolutionary multiobjective optimization with diverse applications in engineering such as behavior of materials geotechnical design flood control water distribution and signal networks This book can serve as a supplementary text for design courses and computation in engineering as well as a reference for researchers and engineers in metaheuristics optimization in civil engineering and computational intelligence Provides detailed

descriptions of all major metaheuristic algorithms with a focus on practical implementation Develops new hybrid and advanced methods suitable for civil engineering problems at all levels Appropriate for researchers and advanced students to help to develop their work

Bituminous Mixtures and Pavements VIII A.F. Nikolaides, E. Manthos, 2024-06-21 Bituminous Mixtures and Pavements VIII contains 114 papers as presented at the 8th International Conference Bituminous Mixtures and Pavements 8th ICONFBMP 12-14 June 2024 Thessaloniki Greece The contributions reflect the research and practical experience of academics and practicing engineers from thirty-four (34) different countries and cover a wide range of topics Session I Bitumen Modified binders Aggregates and Subgrade Session II Bituminous mixtures Design Construction Testing Performance Session III Pavements Design Construction Maintenance Sustainability Energy and Environmental consideration Session IV Pavement management and Geosynthetics Session V Pavement recycling Session VI Pavement surface characteristics Pavement performance monitoring Safety Session VII Biomaterials in pavement engineering Session VIII Prediction models of pavement performance Bituminous Mixtures and Pavements VIII covers recent advances in highway materials technology and pavement engineering and will be of interest to scientists and professionals involved or interested in these areas The ICONFBMP conferences have been organized every four years since 1992 This 8th conference was jointly organized by Laboratory of Highway Engineering Aristotle University of Thessaloniki Greece Built Environment Research Institute BERI University of Ulster UK University of Texas San Antonio UTSA USA Laboratory for Advanced Construction Technology LACT Technological Institute of Iowa USA Technological University of Delft TUDelft The Netherlands and University of Antwerp UA Belgium

Machine Learning in Geohazard Risk Prediction and Assessment Biswajeet Pradhan, Daichao Sheng, Xuzhen He, 2025-07-01 Machine Learning in Geohazard Risk Prediction and Assessment From Microscale Analysis to Regional Mapping presents an overview of the most recent developments in machine learning techniques that have reshaped our understanding of geo materials and management protocols of geo risk The book covers a broad category of research on machine learning techniques that can be applied from microscopic modeling to constitutive modeling to physics based numerical modeling to regional susceptibility mapping This is a good reference for researchers academicians graduate and undergraduate students professionals and practitioners in the field of geotechnical engineering and applied geology Introduces machine learning techniques in the risk management of geo hazards particularly recent developments Covers a broader category of research and machine learning techniques that can be applied from microscopic modeling to constitutive modeling to physics based numerical modeling to regional susceptibility mapping Contains contributions from top researchers around the world including authors from the UK USA Australia Austria China and India

Proceedings of the 8th International Conference on Fracture, Fatigue and Wear Magd Abdel Wahab, 2021-01-12 This proceedings gather a selection of peer reviewed papers presented at the 8th International Conference on Fracture Fatigue and Wear FFW 2020 held as a virtual conference on 26-27 August 2020 The contributions prepared by international

scientists and engineers cover the latest advances in and innovative applications of fracture mechanics fatigue of materials tribology and wear of materials In addition they discuss industrial applications and cover theoretical and analytical methods numerical simulations and experimental techniques The book is intended for academics including graduate students and researchers as well as industrial practitioners working in the areas of fracture fatigue and wear

Artificial Intelligence in Mechatronics and Civil Engineering Ehsan Momeni,Danial Jahed Armaghani,Aydin Azizi,2023-02-15 Recent studies highlight the application of artificial intelligence machine learning and simulation techniques in engineering This book covers the successful implementation of different intelligent techniques in various areas of engineering focusing on common areas between mechatronics and civil engineering The power of artificial intelligence and machine learning techniques in solving some examples of real life problems in engineering is highlighted in this book The implementation process to design the optimum intelligent models is discussed in this book

Multi-Objective Combinatorial Optimization Problems and Solution Methods Mehdi Toloo,Siamak Talatahari,Iman Rahimi,2022-02-09 Multi Objective Combinatorial Optimization Problems and Solution Methods discusses the results of a recent multi objective combinatorial optimization achievement that considered metaheuristic mathematical programming heuristic hyper heuristic and hybrid approaches In other words the book presents various multi objective combinatorial optimization issues that may benefit from different methods in theory and practice Combinatorial optimization problems appear in a wide range of applications in operations research engineering biological sciences and computer science hence many optimization approaches have been developed that link the discrete universe to the continuous universe through geometric analytic and algebraic techniques This book covers this important topic as computational optimization has become increasingly popular as design optimization and its applications in engineering and industry have become ever more important due to more stringent design requirements in modern engineering practice Presents a collection of the most up to date research providing a complete overview of multi objective combinatorial optimization problems and applications Introduces new approaches to handle different engineering and science problems providing the field with a collection of related research not already covered in the primary literature Demonstrates the efficiency and power of the various algorithms problems and solutions including numerous examples that illustrate concepts and algorithms

Metaheuristics In Water Geotechnical And Transport Engineering Elsevier Insights Book Review: Unveiling the Magic of Language

In an electronic era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is actually remarkable. This extraordinary book, aptly titled "**Metaheuristics In Water Geotechnical And Transport Engineering Elsevier Insights**," compiled by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we will delve in to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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