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Message of Editor-In-Chief

Classification with Support Vector Machines, New Quadratic Programming Algorithm

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Abstract-Support vector machines (SVM) are excellent tools for classification and regression. They seek the optimal separating hyperplan and maximal margin. The modeling results often lead to solving a quadratic programming problem. In this paper, we present a simple method to determine the hyperplan H that separates two classes of examples so that the distance between these two classes is maximal. This method is based on the geometric interpretation of the norm of a linear mapping. The result model of our algorithm modeling is a maximization of a concave quadratic program. This quadratic program is resolved by projection method. Example illustrates the method.

Keywords

Support vector machines, separating hyperplan, maximizing concave function, cosine, projection method.

Modeling of recommender systems through Resource Description Framework

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Abstract-Faced with problems of informational overload on a dynamic, distributed and heterogeneous web, current research aims to design and develop recommender systems that are mainly based on techniques of information filtering. In this paper, we propose a hybrid modeling of recommendation systems by formalizes resources description framework (RDF), while based on the integration of elements of the Dublin Core (DC) describing resources and the vocabulary Friend of A Friend (FOAF) describing the users. A hybridization procedure was introduced into the function of similarity calculation. The empirical tests on various real data sets (Book-Crossing, FoafPub) showed satisfactory performances in relevance and precision.

Keywords

Dublin Core; friend of a friend; information filtering; recommendation; social network; user profile.

Spectral Analysis of Ferrous Metal Based on Neural Networks

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***Abstract*-**This study concerns electro-magnetic signals modelling. The main proposes of the present paper consists of the specification spectral analysis of radiation emitted in heterogeneous environment. Comparative study is presented between polynomial Lagrange and neural networks modelling. We show that neural networks give best results when it is experimented to establish concentration elements of ferrous metallic elements.

Keywords

component; formatting; spectral analysis, neural networks, algorithmic complexity, Lagrange approximation.

Numerical Modelling of the Response Hydromécanique around a Tunnel (Example of application: Algiers metro)

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Abstract-Tunneling at shallow depth can induce ground movements that may cause deformation and in extreme cases of severe damage to surface structures this work deals bibliographic analysis and numerical modeling of the hydro mechanical response around a tunnel. a numerical analysis of the effect of excavation of a tunnel towards a low multiple-stage structure centered over the axis of a tunnel. The study is performed using the computer code Plaxis 8.2 which is based on the finite element method (FEM) in plane strain. The analysis applies

to a real case in this instance the Algiers metro, excavation was conducted using the New Austrian Method (NMA) taking account of deconfinement.

Our objective in this work is to estimate numerically the different movements caused by the construction of a tunnel at shallow depth (vertical and horizontal as well as pressure dissipation yard soil consolidation movement.

Keywords

Tunnel, the Algiers Metro, consolidation, coupled hydro-mechanical finite element method. Free surface, settlement, PLAXIS 8.2

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Parametric study of the mechanical response Around a Tunnel (Example of application: Algiers metro)

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Abstract-Tunneling at shallow depth can induce ground movements that may cause deformation and in extreme cases of severe damage to surface structures this work deals with the setting of the hydro mechanical response around a tunnel. a numerical analysis of the effect of excavation of a tunnel towards a low multiple-stage structure centered over the axis of a tunnel. The study is performed using the computer code Plaxis 8.2 which is based on the finite element method (FEM) in plane strain. The analysis applies to a real case in this instance the Algiers metro, excavation was conducted using the New Austrian Method (NMA) taking account of deconfinement.

Our objective in this work is to make a parametric study of geometric parameters differing and so the geotechnical parameter mesh position and lap

Keywords

Tunnel, the Algiers Metro, consolidation. Finite élément method. Settlement, PLAXIS 8.2

Validating Timing And Scheduling Marte's Profils Using Event B: Case Study Of A Gpu Architecture

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Abstract-System on chip multi calculator (CPU and GPU) is a promoted filed to parallelize application thanks to the multi-core GPU architecture. GPUs (Graphic Processing Unit) ensure the parallelism on the chip and discharge the Central Processing Unit (CPU). The specification of scheduling and timing on GPUs had been always a research problematic. MARTE is an efficient semi formal tool for specification thanks to the several diagrams of UML and the new profiles provided by MARTE which treats the software, hardware and scheduling of the specified SoC. But it still none valid specification because it isn't proved. That's why we propose to couple MARTE with the formal method Event B to have a valid and proved specification and to validate the task scheduling on the GPU. After having a valid specification a second phase of executable code generation from Event B specification is essential to execute parallel applications on the GPU. CUDA is an efficient programming language on GPUs because it offers new tools for parallel programming.

Index Terms

GPU, MARTE, Scheduling, Timing Event B, Refinements, Code generation, CUDA.

A numerical investigation of the performance analysis of an electrorheological hydrostatic journal bearing

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Abstract— This work describes a theoretical study concerning the performance characteristics of an electrorheological hydrostatic journal bearing. The hydrostatic journal bearing consists of four hydrostatic bearing flat pads fed by capillary restrictors. A negative electrorheological (NER) fluid is a Newtonian fluid with a viscosity which decreases when an electric field is applied, and which can restore its property when the field is removed. A reversible change in viscosity occurs in milliseconds with application of an electric field. Therefore, these fluids are suitable for the real-time control of vibration and vibration damping. A linear modeling was performed in order to study the performance characteristics of a capillary compensated four-pad hydrostatic journal bearing in order to investigate the effect of negative electrorheological fluids and static eccentricity ratio on carrying load capacity, flow, and the dynamic characteristics (stiffness and damping) of an electrorheological hydrostatic journal bearing. An electrorheological fluid consists of a suspension of micron-sized particles dispersed in a dielectric liquid. The discussion of results includes some thoughts on future trends. The results presented in this work are expected to be quite useful to the bearing designers.

Keywords—Electrorheological fluid, Hydrostatic bearing, Squeeze film lubrication, ***Newtonian fluids, Reynolds equation,*** Journal bearing dynamics.

Local Search Heuristic for Multiple Knapsack Problem

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Abstract—In this paper we will present a heuristic method to solve the Multiple Knapsack Problem. The proposed method is an improvement of the IRT heuristic described in [2].the experimental study shows that our improvement leads some gain in time and solution quality against IRT, MTHM, Mulknap and ILOG CPLEX.

Keywords— Multiple Knapsack Problem; Local Search; heuristic;

Electronic properties of $SrAl_2H_2$ for hydrogen storage

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Abstract-In this paper we report the $SrAl_2H_2$ electronic structure which is a zintl phase hydride in frame of the density functional theory (DFT) using the plane wave and pseudopotential method. We discuss the chemical bond nature using total and partial density of states (DOS) and also we calculated the enthalpy formation of the $SrAl_2H_2$, the phonon frequencies and the thermodynamic functions for hydrogen storage.

Keywords: Hydrogen Storage, Zintl Phase, Metal Hydride, Electronic Properties, Density Functional Theory.

Study of structural, electronic and optical properties of the chalcopyrite $AgGaSe_2$

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Abstract-Ternary compounds with structures of the family of chalcogenide chalcopyrite I-III-VI2 (I = Ag, III = Ga, VI = S, Se) form an extensive semiconductor materials group with diverse optical and electrical properties. Ternary alloys with this composition are well known for their potential applications in the industry of electronic devices and photovoltaics. From a structural point of view, they crystallize with a tetragonal symmetry in the space group I42d (No. 122). The objective of the present work is to predict the structural properties, such as lattice parameter, bulk modulus as well as its derivative compound AgGaSe2 and their mechanical and electronical properties such as band structure and optical properties using the first principle methods (FP-LMTO).