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Abstracts

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USE OF START PAGES FOR BUILDING A MASHUP PERSONAL LEARNING ENVIRONMENT TO SUPPORT SELF-ORGANIZED LEARNERS

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ACM Computing Classification System (1998): I.2.6, K.3.1,H.3.5, F.1.2, D.2.11, D.2.13.
Key words: PLE, start pages, mashup, building, self-organized learners.

Abstract. The paper explores the functionalities of eight start pages and considers their usefulness when used as a mashable platform for deployment of personal learning environments (PLE) for self-organized learners. The Web 2.0 effects and eLearning 2.0 strategies are examined from the point of view of how they influence the methods of gathering and capturing data, information and knowledge, and the learning process. Mashup technology is studied in order to see what kind of components can be used in PLE realization. A model of a PLE for self-organized learners is developed and it is used to prototype a personal learning and research environment in the start pages Netvibes, Pageflakes and iGoogle.

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ON EXTREMAL BINARY DOUBLY-EVEN SELF-DUAL CODES OF LENGTH 88*

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ACM Computing Classification System (1998): E.4, H.1.1.
Key words: Automorphisms, self-dual codes.
* This work was partly supported by the Norwegian Government Scholarship.

Abstract. In this paper we present 35 new extremal binary self-dual doubly-even codes of length 88. Their inequivalence is established by invariants. Moreover, a construction of a binary self-dual $[88, 44, 16]$ code, having an automorphism of order 21, is given.

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AN ADAPTIVE QUADRILATERAL MESH IN CURVED DOMAINS

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ACM Computing Classification System (1998): G.1.0, G.4, G.1.7.
Key words: Adaptation, C++, STL, coupled elliptic system, grid generation.

Abstract. Abstract. An nonlinear elliptic system for generating adaptive quadrilateral meshes in curved domains is presented. The presented technique has been implemented in the C++ language with the help of the standard template library. The software package writes the converged meshes in the GMV and the Matlab formats. Grid generation is the first very important step for numerically solving partial differential equations. Thus, the presented C++ grid generator is extremely important to the computational science community.

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THE COMPUTATIONAL ANALYSIS OF BULGARIAN DIALECT PRONUNCIATION

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ACM Computing Classification System (1998): J.5.
Key words: Dialectology, Computational dialectometry, Phonetic similarity.

Abstract. The paper presents a computational analysis of Bulgarian dialect variation, concentrating on pronunciation differences. It describes the phonetic data set compiled during the project 'Measuring Linguistic Unity and Diversity in Europe' that consists of the pronunciations of 157 words collected at 197 sites from all over Bulgaria. We also present the results of analyzing this data set using various quantitative methods and compare them to the traditional scholarship on Bulgarian dialects. The results have shown that various dialectometrical techniques clearly identify east-west division of the country along the 'jat' border, as well as the third group of varieties in the Rodopi area. The rest of the groups specified in the traditional atlases either were not confirmed or were confirmed with a low confidence.

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ON SOLVING THE MAXIMUM BETWEENNESS PROBLEM USING GENETIC ALGORITHMS

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ACM Computing Classification System (1998): G.1.6, I.2.8.
Key words: Evolutionary approach, Genetic algorithms, Betweenness Problem.

Abstract. In this paper a genetic algorithm (GA) is applied on Maximum Betweennes Problem (MBP). The maximum of the objective function is obtained by finding a permutation which satisfies a maximal number of betweenness constraints. Every permutation considered is genetically coded with an integer representation. Standard operators are used in the GA. Instances in the experimental results are randomly generated. For smaller dimensions, optimal solutions of MBP are obtained by total enumeration. For those instances, the GA reached all optimal solutions except one. The GA also obtained results for larger instances of up to 50 elements and 1000 triples. The running time of execution and finding optimal results is quite short.

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AN OBSERVATION ABOUT VARIATIONS OF THE DIFFIE-HELLMAN ASSUMPTION

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ACM Computing Classification System (1998): F.2, E.3.
Key words: Digital signatures, Boneh-Boyen signatures, Vector signatures, Strong Diffie-Hellman, Computational Diffie-Hellman, Average Case Complexity.

Abstract. We generalize the Strong Boneh-Boyen (SBB) signature scheme to sign vectors; we call this scheme GSBB. We show that if a particular (but most natural) average case reduction from SBB to GSBB exists, then the Strong Diffie-Hellman (SDH) and the Computational Diffie-Hellman (CDH) have the same worst-case complexity.

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METHODS FOR INVESTIGATION OF DEPENDENCIES BETWEEN ATTRIBUTES IN DATABASES*

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ACM Computing Classification System (1998): H.2.8.
Key words: Data mining, association rules, dependency discovery.

* This article presents the principal results of the doctoral thesis "Methods for investigation of dependencies between attributes in databases" by Tsvetanka Georgieva (St. Cyril and St. Methodius University of Veliko Tarnovo), successfully defended before the Specialised Academic Council for Informatics and Mathematical Modelling on 23 February, 2009.

Abstract. This paper surveys research in the field of data mining, which is related to discovering the dependencies between attributes in databases. We consider a number of approaches to finding the distribution intervals of association rules, to discovering branching dependencies between a given set of attributes and a given attribute in a database relation, to finding fractional dependencies between a given set of attributes and a given attribute in a database relation, and to collaborative filtering.