APPLICATION OF WAVELET DECOMPOSITION TO DOCUMENT LINE SEGMENTATION
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Abstract. In this paper an approach to document line segmentation is presented. The algorithm is based on a wavelet transform of the horizontal projective profile of the document image. The projective profile is examined as a one-dimensional discrete signal which is decomposed using the pyramidal wavelet algorithm up to a precise scale, where local minima and maxima are discovered. These local extrema, projected into the input signal, correspond to the spacing between document lines and to the pivots of the lines. The method has been tested on a broad set of printed and handwritten documents and proven to be stable and efficient.

A DIGITAL LIBRARY OF FOLKLORE SONGS AND KEYWORD-BASED SEARCH ENGINE∗
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Abstract. We present a full text search engine in a digital library of Bulgarian folklore songs—in the lyrics and scores of the songs. The deployment of the digital library on the cloud as well as the technical requirements for providing our data to Europeana are discussed.
ON BLOCKING SETS IN AFFINE HJELMSLEV PLANES∗
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Key words: finite chain rings, affine Hjelmslev plane, affine blocking sets.

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Abstract. We prove that the minimum size of an affine blocking set in the affine plane AHG(R^2), |R| = q^2,
R/ rad R ≅ F_q, is q(2q − 1) for all planes over chain rings R with |R| = 4, 9 or 16.

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TIME–HARMONIC BEHAVIOUR OF A CRACKED PIEZOELECTRIC SOLID BY BIEM∗
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ACM Computing Classification System (1998): J.2, G.1.9
Key words: Piezoelectric finite solid, Anti-plane cracks, BIEM, SIF.

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Abstract. Time–harmonic behaviour of a cracked piezoelectric finite solid is studied by nonhypersingular traction
Boundary Integral Equation Method (BIEM). A numerical solution for Crack Opening Displacement (COD) and
Stress Intensity Factor (SIF) is obtained by using Mathematica. Several examples are presented to demonstrate
the dependence of the solution on the crack position.

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BPMN ANALYSIS OF PUBLIC PROCUREMENT∗
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Key words: Business Process Management, Modeling, BPMN, Public Procurement.

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Abstract. This paper formulates a realistic case study of a public procurement process, where the national legal
system is taken in consideration. Business Process Modeling Notation (BPMN) is used for encoding processes
related to the analysis of public procurement tasks. Critical elements in the public procurement process that
affect time, quality and cost are identified at the organizational, process execution and system levels. The main
phases of public procurement are described and problems related to each phase are distinguished. A BPMN
collaboration diagram is used to show how different participants in a process are related and interact with each
other. Choreography diagrams of the latest version of BPMN are being used to model the abstract behavior of
the participants in business interactions for the purpose of providing a standard mapping to the Business Process
Execution Language for Web Services (BPEL) and enable the execution of this behavior.
ADAPTIVE E-LEARNING CONTENT DESIGN AND DELIVERY BASED ON LEARNING STYLES AND KNOWLEDGE LEVEL∗
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Key words: adaptive e-learning systems, models of adaptive hypermedia systems, authoring tool, instructor tool, adaptive engine, narrative storyboard courseware.

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This article presents the principal results of the Ph.D. thesis Adaptive software systems for e-learning by Dessislava Vassileva (Faculty of Mathematics and Informatics at Sofia University), successfully defended at the Specialized Academic Council of FMI on 05 July, 2011.

Abstract. The possibility of adaptive learning content delivery in e-learning systems is one of the important factors for highly improving their quality. Therefore, the application field of adaptive e-learning is relevant and significant. This article presents the main results of a PhD thesis examining various aspects of this area. The aim of the dissertation is to propose a model and a platform architecture of an adaptive e-learning system and a corresponding prototype to be designed, implemented and tested in experimental conditions. On one hand, the developed prototype will assist a learner in accessing and using learning resources which are adapted according to his/her personal characteristics (in this case his/her learning style and level of knowledge). On the other hand, it will facilitate the author of the learning content and course instructor in the creation of appropriate learning objects and applying them to the suitable pedagogical strategies.