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Design and Evaluation of Visible Light Wireless Data Communication Models

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Abstract. The technologies based on the radio frequency used for wireless transmission indoor are more congested than ever these days, therefore several wireless communication alternatives are intensively searched. Some most promising technologies are based on the optical part of the electromagnetic spectrum. The benefits and drawbacks in optical wireless data communication models design are presented in this work. The key characteristics of the VLC systems are briefly discussed, as well. Some models developed for wireless data transfer in visible light communication and infrared are presented, and their operation related to the data rate and the length of the optical link, are briefly compared.

Keywords: Visible Light Communication, LED and PD key characteristics, Optical link, prototypes.

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Predicting the Signs of the Links in a Network

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Abstract. It is hard to deny the importance of graph analysis techniques, particularly the problem of link and link-sign prediction, in many real-world applications. Predicting future sign of connections in a network is an important task for online systems such as social networks, e-commerce, scientific research, and others. Several research studies have been presented since the early days of this century to predict either the existence of a link in the future or the property of the link. In this study we present a novel approach that combine both families by using machine learning techniques. Instead of focusing on the established links, we follow a new research approach that focusing on no-link relationship. We aim to understand the move between two states of no-link and link. We evaluate our methods in popular real-world signed networks datasets. We believe that the new approach by understanding the no-link relation has a lot of potential improvement in the future.

Keywords: Signed Network, Machine learning, Link Prediction.

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The origins of severe software defects method

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Abstract. Identifying the causes which may potentially generate high financial damage was the goal of our research. To reach this goal, we conducted a case study on a system in the field of education. We studied the software defects of this system over several months and classified them based on two classification concepts: the EVOLIS and their severity. These defects prevent any essential operation or activity to be conducted through the concerned system or other systems connected to it. In fact, the occurrence of these failures causes a double financial cost to organizations: one in fixing them and the other one because of the unavailability of the system or systems. We targeted three types of software defects as sources of these failures. We conducted this study by classifying 665 software defects of a school management system and we found that the top two trigger groups are the technology and the IS architecture groups. This result led us to propose a method to identify the origins of severe software defects.

Keywords: Severe software defect, Software defect triggers, Software defect classification.

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The development of a classification model of accounting in the digital economy

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Abstract. A multidimensional classification scheme and a semantic multidimensional accounting data model are defined in this article. Instead of accounts, multidimensional accounting uses categories of economic activity. The proposed multidimensional data model is more flexible than the traditional account model and allows you to expand the capabilities of accounting, taking into account the different needs of users of accounting information. The multidimensional data model allows you to expand the capabilities of accounting, taking into account the different needs of users of accounting information. To create a multidimensional accounting system, the categories of economic activity registered in accounting have been determined, the concept of double entry and balance in a multidimensional representation (probalance) has been formulated. The features of planning in a multidimensional accounting system have been described and the implementation of the financial results plan has been considered.

Keywords: Bookkeeping, Accounting, Semantic data model of accounting, Multidimensional accounting, Multidimensional data model, Hierarchical classification scheme, Categories of economic activity, Commercial activity, multidimensional classification scheme, OLAP, Internal area of accounting, External area of accounting, Pro-balance, Digital economy.

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Development principles for preparing financial reporting in the context of digitalization

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Abstract. The information technology development and the digital economy have a significant impact on the business units' information system. The impact has resulted in a significant increase in the amount of business data used. With increased information availability, development of new processing methods and algorithms, the approaches to financial reporting need to be adjusted and modified. All changes to the basic principles of financial reporting have been included in the new version of the Conceptual Framework for Financial Reporting. It will come into force on January 1, 2020 for all business units developing their reporting policies under IFRS. The paper overviews the amendments and innovations introduced by the new version of this document. The Conceptual Framework dialectics has been reviewed based on all document versions since 1989. We analyzed the impact of digital technology on the transformation of accounting methods and principles and on the preparation of financial statements. The paper is of practical importance and helps to assess various areas of system development of the IFRS methodology in the context of digital economy.

Keywords: Conceptual Framework, Financial reporting, Digitalization, Principles.

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Aims and Objectives

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