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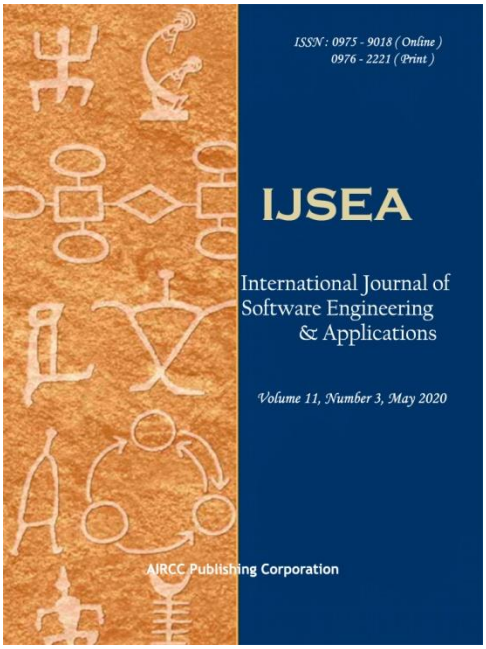

PROGRAMMER PRODUCTIVITY ENHANCEMENT THROUGH CONTROLLED NATURAL LANGUAGE INPUT

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ABSTRACT

We have created CABERNET, a Controlled Nature Language (CNL) based approach to program creation. CABERNET allows programmers to use a simple outline-based syntax. This allows increased programmer efficiency and syntax flexibility. CNLs have successfully been used for writing requirements documents. We propose taking this approach well beyond this to fully functional programs. Through the use of heuristics and inference to analyze and determine the programmer's intent we are able to create fully functional mobile applications. The goal is for programs to be aligned with the way that the humans think rather

than the way computers process information. Through the use of templates a CABERNET application can be processed to run on multiple run time environments. Because processing of a CABERNET program file results in native application program performance is maintained.

KEYWORDS

Controlled Natural Language, Literate Programming, Programming Language, Computer-aided Software.

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TOWARDS AUDITABILITY REQUIREMENTS SPECIFICATION USING AN AGENT-BASED APPROACH

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ABSTRACT

Transparency is an important factor in democratic societies composed of characteristics such as accessibility, usability, informativeness, understandability and auditability. In this research we focus on auditability since it plays an important role for citizens that need to understand and audit public information. Although auditability has been a subject of discussion when designing systems, there is a lack of systematization in its specification. We propose an approach to systematically add auditability requirements specification during the goal-oriented agent-based Tropos methodology. We used the Transparency Softgoal Interdependency Graph that captures the different facets of transparency while considering their operationalization. An empirical evaluation was conducted through the design and implementation of LawDisTrA system that distributes lawsuits among judges in an appellate court. Experiments included the distribution of over 300,000 lawsuits at the Brazilian Superior Labor Court. We theorize that the presented approach for auditability provides adequate techniques to address the cross-organizational nature of transparency.

KEYWORDS

Agent-Based System, Agent-Oriented Software Development, Auditability Analysis, Multi-Agent System, Transparency

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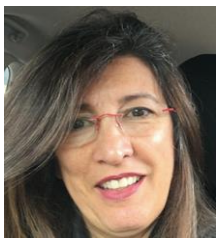

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HOW (UN)HAPPINESS IMPACTS ON SOFTWARE ENGINEERS IN AGILE TEAMS?

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ABSTRACT

Information technology (IT) organizations are increasing the use of agile practices, which are based on a people-centred culture alongside the software development process. Thus, it is vital to understand the social and human factors of the individuals working in agile environments, such as happiness and unhappiness and how these factors impact this kind of environment. Therefore, five case-studies were developed inside agile projects, in a company that values innovation, aiming to identify how (un)happiness impacts software engineers in agile environments. According to the answers gathered from 67 participants through a survey, interviews and using a cross-analysis, happiness factors identified by agile teams were effective communication, motivated members, collaboration among members, proactive members, and present leaders.

KEYWORDS

Software Development, Human Factors, Agile Projects, Agile Environment, Happiness, Unhappiness.

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THE PROPOSED IMPLEMENTATION OF RFID BASED ATTENDANCE SYSTEM

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ABSTRACT

Recent trends in Information and Communication Technology (ICT) embrace several smartphone applications in a variety of educational and industrial domains in the last several years. This research focuses to solve one of the promising problems of an educational domain to take attendance smartly using the Radio Frequency Identification (RFID) system. Current attendance system in King Abdul-Aziz University (KAU) Saudi Arabia is partly solving the attendance problem. There are several problems in the existing attendance systems such as time-consuming, the chance of mistakes, truancy issues, no contact with parent/guardian and not efficient because of roll call as taking manual attendance. The proposed RFID based attendance system will provide robust, secure and automatic attendance. The proposed system will use modern technology and support to institutions and parents to deal with most of the problems of existing attendance systems. There are several other benefits of RFID based system such as web-based and mobile interfaces, daily absent report, an automatic SMS alert to parent/guardian, reduce administrative work, improve the ratio of attendance, economical and highly efficient. The case study method will be used as a research design. The proposed system is developed and tested in KAU Saudi Arabia. The proposed system will have both web and mobile interfaces. The web interface will need the Internet to access the proposed system and the mobile interface will use the Android platform for the testing scenarios. The user will access the system to generate customized reports to review the status of students for a particular course. It is anticipated that the proposed system will significantly improve students' monitoring mechanisms hence enabling both parents and teachers in making appropriate decisions.

KEYWORDS

Radio frequency identification, case study, smart attendance system, educational domain, Scrum methodology

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ENSEMBLE REGRESSION MODELS FOR SOFTWARE DEVELOPMENT EFFORT ESTIMATION: A COMPARATIVE STUDY

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ABSTRACT

As demand for computer software continually increases, software scope and complexity become higher than ever. The software industry is in real need of accurate estimates of the project under development. Software development effort estimation is one of the main processes in software project management. However, overestimation and underestimation may cause the software industry loses. This study determines which technique has better effort prediction accuracy and propose combined techniques that could provide better estimates. Eight different ensemble models to estimate effort with Ensemble Models were compared with each other base on the predictive accuracy on the Mean Absolute Residual (MAR) criterion and statistical tests. The results have indicated that the proposed ensemble models, besides delivering high efficiency in contrast to its counterparts, and produces the best responses for software project effort estimation. Therefore, the proposed ensemble models in this study will help the project managers working with development quality software.

KEYWORDS

Ensemble Models, Bagging, Stacking, Prediction, Machine Learning, Effort Estimation, Project Management

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FACTORS THAT AFFECT THE REQUIREMENTS ADHERENCE TO BUSINESS IN AGILE PROJECTS: AN INDUSTRIAL CROSS-CASE ANALYSIS

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ABSTRACT

Agile Software Development has advanced in the latest years, but research evidence indicates limitations related to its usage along with Requirements Engineering. One of the reasons for failures in agile projects is the nonconformity to the needs of business processes in companies. This study conducted a cross-case analysis in seven companies to investigate Requirements Engineering in agile projects. Documentation, observation, and interviews were triangulated, analyzed and synthesized by applying techniques of thematic analysis. The aim was identifying factors that affect the requirements adherence to business. The customer business knowledge by the team and the customer availability during elicitation and validation of software requirements are essential to the requirements adherence to business in agile projects. That way, the developed systems (both Information Systems and Intelligent Systems) can better meet the needs of the organization's business processes.

KEYWORDS

Requirements Engineering, Agile Methods, Cross-Case Analysis, Business Process Modelling, Artificial Intelligence

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IT PROJECT SHOWSTOPPER FRAMEWORK: THE VIEW OF PRACTITIONERS

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ABSTRACT

The study intended to unravel critical IT project showstoppers which tend to halt IT projects temporarily or permanently, and ultimately cause them to fail, by positioning them in the systems development life cycle (SDLC) framework. Interviewing 8 IT project and program managers of the banking and telecommunications industries in Ghana individually and in a group, 19 critical showstoppers were identified spanning the whole SDLC. Generally, it was observed that for the successful completion of IT projects, the expertise and availability of project managers and team members are critical. Again, the project manager must be able to prove that the project is in line with the objectives and strategic direction of the business, is being mounted to gain competitive advantage, and has a solid business case. Thirdly, funding is key at all stages of the cycle, as well as approval for continuation at various stages.

KEYWORDS

Information Technology, Project Showstopper, System, Development, Life Cycle

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