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A REVIEW OF SOFTWARE QUALITY MODELS FOR THE EVALUATION OF SOFTWARE PRODUCTS

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ABSTRACT

Actually, software products are increasing in a fast way and are used in almost all activities of human life. Consequently measuring and evaluating the quality of a software product has become a critical task for many companies. Several models have been proposed to help diverse types of users with quality issues. The development of techniques for building software has influenced the creation of models to assess the quality. Since 2000 the construction of software started to depend on generated or manufactured components and gave rise to new challenges for assessing quality. These components introduce new concepts such as configurability, reusability, availability, better quality and lower cost. Consequently the models are classified in basic models which were developed until 2000, and those based on components called tailored quality models. The purpose of this article is to describe the main models with their strengths and point out some deficiencies. In this work, we conclude that in the present age, aspects of communications play an important factor in the quality of software.

KEYWORDS

Software Quality, Models, Software quality models, Software components, COTS.

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E-Government Maturity Models: A Comparative Study

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ABSTRACT

Many maturity models have been used to assess or rank e-government portals. In order to assess electronic services provided to the citizens, an appropriate e-government maturity model should be selected. This paper aims at comparing 25 e-government maturity models to find the similarities and differences between them and also to identify their weaknesses and strengths. Although the maturity models present large similarities between them, our findings show that the features included in those models differ from a maturity model to another. Furthermore, while some maturity models are covering some features and introducing new ones, it seems that others are just ignoring them.

KEYWORDS

E-government, portal, maturity model, comparison, best practices, e-services, maturity stages

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THREATS AND OPPORTUNITIES WITH AI-BASED CYBER SECURITY INTRUSION DETECTION: A REVIEW

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ABSTRACT

Internet usage has increased quickly, particularly in the previous decade. With the widespread use of the internet, cybercrime is growing at an alarming rate in our daily lives. However, with the growth of artificial intelligence (AI), businesses are concentrating more on preventing cybercrime. AI is becoming an essential component of every business, affecting individuals worldwide. Cybercrime is one of the most prominent domains where AI has begun demonstrating valuable inputs. As a result, AI is being deployed as the first line of defense in most firms' systems. Because AI can detect new assaults faster than humans, it is the best alternative for constructing better protection against cybercrime. AI technologies also offer more significant potential in the development of such technology. This paper discusses recent cyber intrusions and how the AI-enabled industry is preparing to defend itself in the long run.

KEYWORDS

AI, cybercrime, cyberattacks, machine learning, cybersecurity, security analytics, classification.

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FEDERATED LEARNING FOR PRIVACY-PRESERVING: A REVIEW OF PII DATA ANALYSIS IN FINTECH

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ABSTRACT

There has been tremendous growth in the field of AI and machine learning. The developments across these fields have resulted in a considerable increase in other FinTech fields. Cyber security has been described as an essential part of the developments associated with technology. Increased cyber security ensures that people remain protected, and that data remains safe. New methods have been integrated into developing AI that achieves cyber security. The data analysis capabilities of AI and its cyber security functions have ensured that privacy has increased significantly. The ethical concept associated with data privacy has also been advocated across most FinTech regulations. These concepts and considerations have all been engaged with the need to achieve the required ethical requirements. The concept of federated learning is a recently developed measure that achieves the abovementioned concept. It ensured the development of AI and machine learning while keeping privacy in data analysis. The research paper effectively describes the issue of federated learning for confidentiality. It describes the overall process associated with its development and some of the contributions it has achieved. The widespread application of federated learning in FinTech is showcased, and why federated learning is essential for overall growth in FinTech.

KEYWORDS

FinTech, AI, federated learning, machine learning, cyber security, data privacy, PII data, differential privacy.

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FACTORS INFLUENCING QUALITY OF MOBILE APPS: ROLE OF MOBILE APP DEVELOPMENT LIFE CYCLE

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ABSTRACT

In this paper, The mobile application field has been receiving astronomical attention from the past few years due to the growing number of mobile app downloads and withal due to the revenues being engendered .With the surge in the number of apps, the number of lamentable apps/failing apps has withal been growing. Interesting mobile app statistics are included in this paper which might avail the developers understand the concerns and merits of mobile apps. The authors have made an effort to integrate all the crucial factors that cause apps to fail which include negligence by the developers, technical issues, inadequate marketing efforts, and high prospects of the users/ consumers. The paper provides suggestions to eschew failure of apps. As per the various surveys, the number of lamentable/failing apps is growing enormously, primarily because mobile app developers are not adopting a standard development life cycle for the development of apps. In this paper, we have developed a mobile application with the aid of traditional software development life cycle phases (Requirements, Design, Develop, Test, and, Maintenance) and we have used UML, M-UML, and mobile application development technologies.

KEYWORDS

Mobile applications, low quality/bad apps, mobile apps marketing, Mobile Application development, Mobile Software Engineering, M-UML, UML

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PEOPLE FACTORS IN AGILE SOFTWARE DEVELOPMENT AND PROJECT MANAGEMENT

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ABSTRACT

With the increasing popularity of Agile Methods, many software organisations are moving away from traditional methods to adopt Agile development methodologies. Instead of being predictive, Agile is rather adaptive and people-focussed. It advocates a small and collaborative team that work closely together. But team size is a factor that is in turn constrained by people factors. When implementing Agile, these key factors are often overlooked. This study aims at identifying the underlying people factors to consider when adopting Agile for a team to be effective. The method used is the study of three different sized Agile teams developing products based on the same technologies and using Scrum. Both objective and subjective measures were used and the results are supported by a survey. The results clearly show that for agile methodologies to work well, it is crucial to select the right people for the right team.

KEYWORDS

Agile Methodology, Scrum, Agile Teams, Software Development, Project Management

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Different Approaches To Black box Testing Technique For Finding Errors

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ABSTRACT

Software testing is the process of analyzing software to find the difference between required and existing condition. Software testing is performed throughout the development cycle of software and it is also performed to build quality software, for this purpose two basic testing approaches are used, they are white box testing and black box testing. One of the software testing technique which I have explain in my paper is Black Box Testing, it is a method of generating test cases that are independent of software internal structure, I have also briefly explore various different approaches to black box testing technique for finding errors. Since black box testing is always based either directly or indirectly on the software specification so it is also called specification based testing.

KEYWORDS

Equivalence Partitioning, Boundary Value Analysis, Fuzz Testing, Orthogonal Array Testing, All Pair Testing

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FORMALIZATION OF THE DATA FLOW DIAGRAM RULES FOR CONSISTENCY CHECK

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ABSTRACT

In system development life cycle (SDLC), a system model can be developed using Data Flow Diagram (DFD). DFD is graphical diagrams for specifying, constructing and visualizing the model of a system. DFD is used in defining the requirements in a graphical view. In this paper, we focus on DFD and its rules for drawing and defining the diagrams. We then formalize these rules and develop the tool based on the formalized rules. The formalized rules for consistency check between the diagrams are used in developing the tool. This is to ensure the syntax for drawing the diagrams is correct and strictly followed. The tool automates the process of manual consistency check between data flow diagrams.

KEYWORDS

Consistency Check, Context Diagram, Data Flow Diagram, Formal Method

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BENCHMARKING MACHINE LEARNING TECHNIQUES FOR SOFTWARE DEFECT DETECTION

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ABSTRACT

Machine Learning approaches are good in solving problems that have less information. In most cases, the software domain problems characterize as a process of learning that depend on the various circumstances and changes accordingly. A predictive model is constructed by using machine learning approaches and classified them into defective and non-defective modules. Machine learning techniques help developers to retrieve useful information after the classification and enable them to analyse data from different perspectives. Machine learning techniques are proven to be useful in terms of software bug prediction. This study used public available data sets of software modules and provides comparative performance analysis of different machine learning techniques for software bug prediction. Results showed most of the machine learning methods performed well on software bug datasets.

KEYWORDS

Machine Learning Methods, Software Bug Detection, Software Analytics, Predictive Analytics

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CODE QUALITY EVALUATION METHODOLOGY USING THE ISO/IEC 9126 STANDARD

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ABSTRACT

This work proposes a methodology for source code quality and static behaviour evaluation of a software system, based on the standard ISO/IEC-9126. It uses elements automatically derived from source code enhanced with expert knowledge in the form of quality characteristic rankings, allowing software engineers to assign weights to source code attributes. It is flexible in terms of the set of metrics and source code attributes employed, even in terms of the ISO/IEC-9126 characteristics to be assessed. We applied the methodology to two case studies, involving five open source and one proprietary system. Results demonstrated that the methodology can capture software quality trends and express expert perceptions concerning system quality in a quantitative and systematic manner.

KEYWORDS

Software Quality Management, Static Analysis, Software Metrics, ISO/IEC 9126

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