

SOFTWARE ENGINEERING COMPETENCE – A REVIEW

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Abstract: This review paper focuses on the software engineering and developing capability of software engineering students in order to make them capable and well conversant enough to work in any software development organization. The study emphasis on different solutions that have been mentioned by various research scholars that contributed to the growth of students as well as software industry. The most important thing that the paper has fetched out that there are different colleges and universities that provides degrees in software engineering paradigm despite that most of the students are not able to develop a modular approach for software development. This is the biggest problem the students as well as the software industry are facing in this era. In this study there are different explorations, ideas and framework model (E – CF) that have been provided by research scholars. This paper focuses on the different perspective of innumerable researchers who have been exploring new technology and innovative way for providing motivation to students and employees of software companies in order to make them worthy and profound. Some researchers have given an approach for automated requirement extraction so that requirements are easily fetched and taken out. Some researchers reviewed different standards while some demonstrated ideas of commencement of global information system and some researchers focus on the need of Software Project Management (SPM) for the students awareness about the realistic projects that are running in software company.

Keywords - Software Engineering, Framework model (E- CF) and Software Project Management (SPM).

I. INTRODUCTION

This review paper emphasis on the need, anticipation and requirements of today's technology era of software development as Internet – based information transmissions play an important role in making software projects trust worthy and technically sound. To achieve the objective of making software development technically well there should be an appropriate study and framework for students of software engineering fields. Many research scholars have provided a keen approach for bringing software competence in software engineering students. There are several studies and discussions that have been carried out to make students able to design an innovative approach towards software development. There are different standards described by International Organization for Standardization (ISO). These vital standards describes the execution of project requirements (i.e. requirements demonstrating procedure of building software product) Students should be taught according to the norms and specifications of today's software engineering era. Software engineering is the study of systematic and quantified approach for developing software. In order to increase individual competence for software development, one must be well equipped with systematic, well defined approach and good programming strategy. This paper reviewed different existing framework model and studies that have been depicted their way of achieving competence in field of software development. The IT industry requires students from different universities who knew about the current, latest technology and their application for different Content Management Systems (CMS).The software engineering competence is used to make the future of students brighter so that they could work on different technology very well and do not face any problem regarding software development.This review paper contains different proposals for designing new approach and disciplines for enhancing the level of software engineering competence. The also provides some tools and methodologies for enhancing competence and ability of software engineering graduates so that they can use resources optimally in order to make proficient software.

II. TECHNIQUES AND DIFFERENT METHODOLOGIES FOR APPLYING COMPETENCE IN SOFTWARE ENGINEERING GRADUATES

Misnevs et al. [1] discussed the role of information technology that plays a vital role in developing new methodology for evaluating and evolving software engineering competences. The common framework is needed to access their acquired competence. The attempt has been made to review different types of model to evaluate the capability of individual to work in software engineering premises and emphasis has been made on the issues and flaw related to remote evaluation of software engineering competence similar to European competence framework model (E-CF).He suggested a web portal which is dedicated for doing master program training and supervision, synchronization between several baltic universities. He suggested Software Engineering Competence Evaluation Internet Portal(SECIP) projects that describe core idea related to the software development of common standard for higher education. He presented the methodology for determining the proficiency of software engineering graduates. With the help of his methodology employer can know the competence of his employees.

Misra et al. [2] explained the immense requirement of modifying the course curriculum in order to make software developer well conversed. He noticed that in majority of computer related branches like computer science, computer engineering and information system engineering, there is no place for Software Project Management (SPM) Course. His emphasis on the merits of software project management (SPM) because SPM teaches fundamental practices on good project management needed by Information Communication Technology (ICT) practitioners. It has been explained that how to manage people, processes and problems, how to estimate efforts, cost and project duration, how to access risk and how a set of software engineering works. He demonstrated the necessities of providing the fundamental knowledge to students for project management including the cost management, risk management, communication management and Quality management. He concluded that Software Project Management (SPM) is the most relevant course from programmers' point of view.

Bohm et al. [3] proposed integration of methodology of systems and software engineering processes for ensuring safety and real-time properties. There is a need of integration because embedded systems become more and more complex and tedious.

He suggested availing and artifacting oriented engineering paradigm model for enabling interoperability between different engineering disciplines. He presented an approach that make the integration of International Organization for Standardization and International Electro technical Commission (ISO/IEC 2207) – Compliant Software Engineering activities by using the relevant methodology of SPES modeling framework.

Casale et al. [4] described the software does not require development of complex machinery. It can be formed on personal computers and any person who has knowledge of technical skills can code very well. He explained about the relevant and most important topic of European research projects in the area of software engineering challenges which software engineering is facing. Li et al. [5] presented an approach for automatic requirement extraction system in which requirements are extracted automatically. He has noticed that software is not effectively developed because we would not be able to get whole requirements from clients he uses text analysis techniques for reducing information overload. He applies a topic modeling algorithm to collect systematically requests.

Huang et al. [6] proposed an information retrieval based approach which deals with the detection of non functional requirements. Schneider et al. [7] reviewed seven international standard and one technical report in which International Organization for Standardization (ISO), International Electro technical Commission (IEC) and Institute of Electrical and Electronics Engineers (IEEE) defines protocol. The objective is to accumulate different standard coherently and more easily. Therefore he includes all parts of ISO 25000("Square Series").

Amara et al. [8] illustrated the basic idea of reliability and procedure for measuring it. It has been described that reliability depicts techniques, model and metrics, he has an improving technique over Existing technique, the emphasis on only usage of reliability models in the measurement steps in the testing phase. He proposed a framework that states the relevant benefits that can be used in different phases of software development life cycle (SDLC).

Luo et al. [9] described the commencement of global information system (GIS) software development model, He invented a service oriented and distributed ultra large GIS platform. He demonstrated new generation of GIS architecture technology which is different from old GIS architecture. It support under laid upward platform and also adopts loose coupling (flexible coupling) and strong expandability between functional modules.

III. DEVELOPMENT OF FRAMEWORK FOR ENHANCING COMPETENCE IN SOFTWARE ENGINEERING

Sheshasaayee et al. [10] described a framework with the help of static metrics that is specified to find out the quality attributes for Aspect Oriented Software (AOS). A framework has been derived for forecasting different arguments like maintainability, changeability, reusability and testability. Saraiva et al. [11] proposed and described a framework for the maintenance of Aspect Oriented System (AOS) and concluded that these metrics are not having theoretical validation. Patil et al. [12] derived a framework that define the Goal Driven Requirement Engineering (GDRE). This procedure and framework can be used by any cloud infrastructure organization with the help of Global Software Awareness (GSA). This methodology depicts the cloud data security for (GDRE). Kitchenham et al. [13] suggested framework for quality model. Risk Topic-Specific Page Rank(TSPR) model which describes the actual experience of risk to data security. Topic-Specific Page Rank (TSPR) model plays an important role for software company and its employees for making them keen developer of software. Michael et al. [14] specified the definition of cloud as collection of independent autonomous computer that appears to user as homogeneous system. Anjaraia et al. [15] described the quantitative analysis for information leakage in order to determine how leakages of one portion of software can prorogate the leakage of another portion of software.

Ribeiro et al. [16] discussed a software tool for solving practical problem in smart grid software. He presented a framework so that a system can heal automatically. It is Q-learning based framework for healing system in automatic manner. Widyani et al.

[17] demonstrated an experience in which he emphasis on running software development course in undergraduate program at informatics engineering. He focuses on the enhancement of knowledge of students so that they can develop good projects. He used unified process method for developing software so that the software becomes more productive. This method provides an approach for

engineering software in order to increase technical skills. Figure 1 explains the aspect oriented maintenance matrices validation through a flow chart.

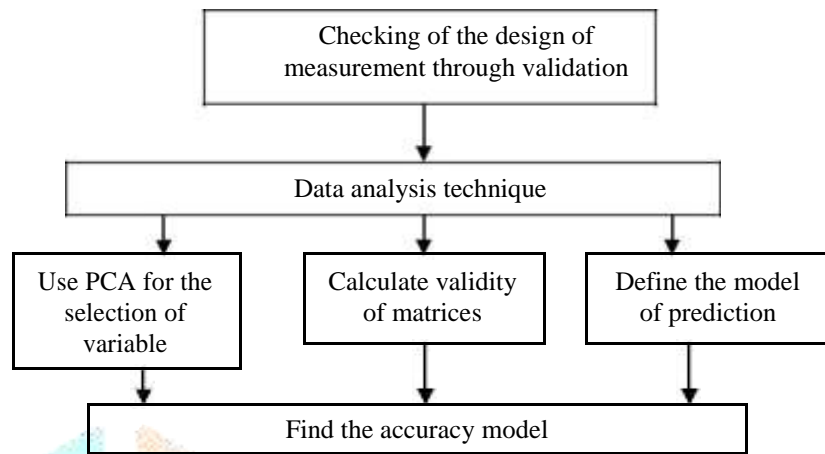


Fig 1: Framework for Aspect Oriented maintenance matrices validation

Mirzianov et al. [18] suggested a framework EQANIE (European Quality Assurance Network for Informatics Education) for IT students so that they improve the skill of professional development of software. It also emphasis on the 2D ISO/IEC 33000 compatible learning process model for learning software development. Danar et al. [19] discussed an integrated analysis framework so the students and corporate can achieve their goals of software development in order to enhance the quality of software. Yousef et al. [20] described CMMI-DEVV1.2 (Capability Maturity Model Integration for Development) as the important model for enhancing the level of performance of IT students. It helps the IT (Information Technology) students in order to develop reliable software.

IV. CONCLUSION

In this review paper we have discussed and suggested different methodologies, techniques and framework for acquiring software engineering competence which have been published by different Researchers who have been exploring new ideas for improving competence in different domains of software engineering competence. Our goal is to specify the different techniques and make efforts for obtaining software engineering competence. Perhaps in the future we will include more technologies that can be able to help software engineering graduates for achieving competence.

V. REFERENCES

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