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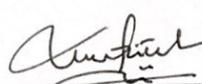
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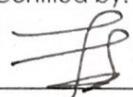
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COMPONENT BASED SOFTWARE ENGINEERING
META-MODEL FOR EMBEDDED SYSTEMS PREDICTION

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A dissertation submitted in partial fulfilment of the
requirements for the award of the degree of
Master of Science (Computer Science)

Faculty of Computing
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AUGUST 2016

I declare that this thesis entitled "*Component Based Software Engineering Meta-Model for Embedded Systems Prediction*" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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To my father, Omar Bin Sarbini

To my mother, Norrimi Binti Abd Malik

To my sister, Nur Aisyah Binti Omar

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ABSTRACT

The complexity issues in software systems especially in the domain PF system can be overcome using a suitable possible method. It is possible to determine reliability of the software system during the software design level. Component reliability model for software system for embedded real time system is kind of application that can give limelight to the novelty theory towards software system especially on the design phase. Timing constrain that bring fault to the software system at the end of the deployment for complex system increase the maintenance effort thus increase the management cost of the system. Application of component based reliability model support the idea of component reused in development process of software system thus enable any suitable component to fixed in the current component model. The aim of this research is to propose a component reliability model that supports the application of component reliability real time system for early design phase. The component based model combined the methodology and profile of component based is enhance by integrates a meta-model of reliability element thus enable the reliability prediction to maintain the quality of the complex software of develop system. The software process model line up the reliability prediction analysis process through related reliability equation for monitoring the accuracy of reliability component model and thus compare the result with existing approach model through NIMSAD.

ABSTRAK

Isu-isu yang kompleks dalam sistem perisian terutamanya dalam medan sistem PF boleh diatasi dengan menggunakan kaedah yang sesuai. Ia adalah untuk menentukan kebolehpercayaan bagi sesebuah sistem perisian semasa diperingkat reka bentuk perisian model. Kebolehpercayaan komponen untuk sistem perisian untuk sistem terbenam masa nyata adalah jenis aplikasi yang boleh memberi perhatian kepada sesuatu teori yang baru ke arah sistem perisian terutama pada fasa reka bentuk. Kerumitan masa boleh membawa kerosakan pada sistem perisian di akhir pelaksanaan untuk sistem kompleks. Ini akan meningkatkan usaha penyelenggaraan seterusnya meningkatkan kos pengurusan sistem. Penggunaan komponen berdasarkan model kebolehpercayaan menyokong idea penggunaan semula komponen dalam proses pembangunan sistem perisian yang membolehkan mana-mana komponen yang sesuai untuk mengekalkan model komponen semasa. Tujuan kajian ini adalah untuk mencadangkan model kebolehpercayaan komponen yang menyokong aplikasi kebolehpercayaan komponen sistem masa nyata untuk fasa reka bentuk awal. Model berdasarkan komponen gabungan metodologi dan profil komponen berdasarkan boleh ditingkatkan dengan mengintegrasikan meta-model unsur kebolehpercayaan dengan itu membolehkan ramalan kebolehpercayaan untuk mengekalkan kualiti perisian kompleks membangunkan sistem. Garis model proses perisian sehingga proses analisis kebolehpercayaan ramalan melalui persamaan kebolehpercayaan yang berkaitan untuk memantau ketepatan model komponen kebolehpercayaan dan dengan itu membandingkan hasil dengan model pendekatan yang sedia ada melalui model NIMSAD.

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