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SYNERGY

Automated Resource Analysis System to Optimise Project
Management

A Dissertation by

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Abstract

Mass software development requires the collaboration of many people with miscellaneous technical backgrounds as it is a very complicated problem-solving process. The technical perspectives play a vital role in the success of a software project, but it also depends heavily upon how efficient and effective those people operate as a team. The key success factors of a software project are recognized as proper team and time management. But most of the time software projects fail to meet their initial timelines and to deliver the product features to meet the original objectives. The conventional models which are currently in use for team composition and time estimation in software projects are mostly based on data gathered in the design phase of a project. The involvement of project managers in manually feeding the data into the models compromises the accuracy of the output of the model. Also, these models were introduced many years back and the parameters used in the models are outdated due to the constantly changing software development methodologies. The existing algorithmic approaches used to solve the team composition and time estimation problem in software projects are mainly based on team size. Synergy, the proposed data analyzing statistical model will facilitate team composition and time estimation in software projects by mining contribution history of developers and projects on GitHub which is a vastly growing source code management platform for software projects. The model is based on the parameters to assess the prior experience of programming languages and source code contribution volume of the developers and the contribution history of completed projects. This dissertation will provide an analysis and evaluation of the capabilities of the proposed statistical model in optimizing the accuracy and the efficiency of team composition and time estimation process for software development projects.

Key Words: *Statistical model, GitHub, Team composition, Time estimation, Data analyzer, Contribution History*