ETSF01 Project Mission: Analogy-Based Effort Estimation for Software Projects

Background

This project mission is related to the project of the course ETSF01 (Software Engineering Process – Economy and Quality): http://cs.lth.se/etsf01.

Software project estimation is an important task in the early stages of a software development project. Good planning of development tasks depends on a good understanding of the amount of work (effort) that needs to be invested in order to achieve the project goal.

Goal

The goal of this project is to support a project manager during the planning stage of a software development project by providing a software tool that generates effort estimates based on known (or assumed) characteristics of the software development project and data of completed software development projects.

Requirements

The Analogy-Based Effort Estimation (AESP) software tool shall fulfill the following functional and quality requirements.

<u>Functional Requirements</u>

FR-01: [Completed Project Data] The AESP software tool shall accept data of up to 1000 completed software development projects comprising information about the actual effort consumed and up to 20 project characteristics. An example of such data can be found at the following URL: http://promise.site.uottawa.ca/SERepository/datasets/cocomonasa.arff

FR-02: [Project Characteristics] The AESP software tool shall accept up to 20 project characteristics, consistent with the project characteristics contained in the data set of completed projects.

FR-03: [Effort Units] The effort estimate generated by the AESP software tool shall be stated using the following units: person-hours (ph), person-days (pd), person-months (pm), and person-years (py).

FR-04: [Similarity Threshold] The users of the AESP software tool shall be able to set the similarity threshold for the similarity function used to generate the effort estimate.

FR-05: [Similarity Function] The similarity between the new project and the set of completed projects used for the effort estimation shall be in the interval [0, 1]. If the achievable similarity is below the threshold set by the user of the AESP software tool, a message shall be issued to inform the user.

FR-06: [Language] The user interface and all messages and documentation related to the AESP software tool shall be in English.

<u>Quality Requirements</u>

QR-01: [Learnability] The functionality of the AESP software tool shall be easy to learn, i.e., 3 out of 4 users shall be able to generate an effort estimate for a new project within 15 minutes when using the tool for the first time.

QR-02: [Usability] The AESP software tool shall be easy to install/access, i.e., 3 out of 4 users shall be able to get the tool ready for use within 5 minutes.

QR-03: [Accuracy] The prediction quality of the estimates generated by the AESP software tool shall be PRED(0.3)=0.8, i.e., the accuracy of an effort estimate generated by the tool shall be within +/-30% of the actual effort in at least 80% of the tool applications (in different software projects).

Task

Your task is to develop and test a software program that implements all requirements listed above. The process for developing this software program is defined in document ESF01-Project-Description.pdf.