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Analysis of Requirement Elicitation Using Multilayer Perceptron Neural Networks

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***Abstract*: The difficulty in acquiring the requirements from the end users and analyzing them for the immediate future is well known for the RE engineers. The requirements evolve at different stages, users deny to give the required information, may get unsettled with different queries. These are challenges to face for the entire organization. This brings RE process to a halt. In order to build a bridge between the end users and designers, appropriate process has to be designed. One such process is proposed in this paper. The gap is filled by merging the process of surveying with data mining and analyzing it with neural networks for trend reports**.

***Keywords: RE (requirements engineering), RE process, data mining, neural networks*.**

INTRODUCTION

Software engineering is one such branch of computer science stream which decides and define what software must be. Software engineering acts as interface between user and manufacturer.RE process is one of the most researched topics since it is both sensitive and efficient[3].

Customer is interested only in that product which is reliable, safe and secure and is flexible enough for their needs[2]. Trust of customer is of the at most important for any company to bank upon its own investments over a software product. Whenever software is designed and delivered it must satisfy the major needs[1]. To accomplish we rely on requirement engineering.

THE MAIN PROCESS OF REQUIREMENT ENGINEERING: A BRIEF OVERVIEW

RE can be called as that step where in one discovers the real life based user requirement. Generally users don’t comply with feedbacks, classical approaches of interviewing and surveying. The competition among different institution and organization has led to innovations in RE. One such way of RE model is brought about here[5].

The algorithm is designed to keep track of all the requirements in the background. There won’t be any direct contact with the user. Hence the user is free enough to open himself with his requirements[7]. The algorithm follows:

i. Data/requirements realization:

The step can be carried via a simple pearl script or any other software available.

ii. Data/requirement filtering:

The data can belong to any person anywhere in the world. Among these data many requirements are of no use. Hence they need to be filtered away.

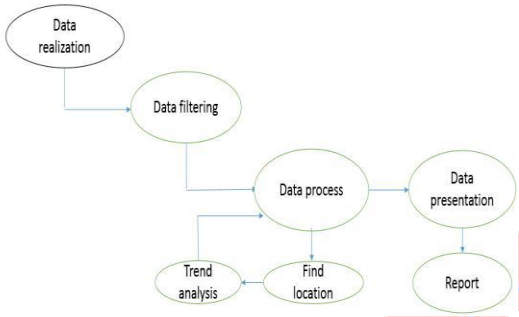
iii. Data/requirement processing

Location of the user and the respective trends in these locations. This can be done in two sub steps which are described later.

iv. Data/requirement presentation

The trend analysis reports, the actual requirements all must be documented and a valid final report is to be presented. Each and every granule of the presentation will be of utmost importance, since it is closer to the implementation.

GENERAL MODEL



DETAILED PROCESS FOR A CASE STUDY:

Case: To find out the requirements of the students, parents or any other person using college website as the resource.

The problem was challenging enough because there were many factors to be considered.

i) The browser is a student or may not.

ii) The browser is a parent or may not.

iii) Is the browser already a part of institution

iv) The location of the accessor etc.

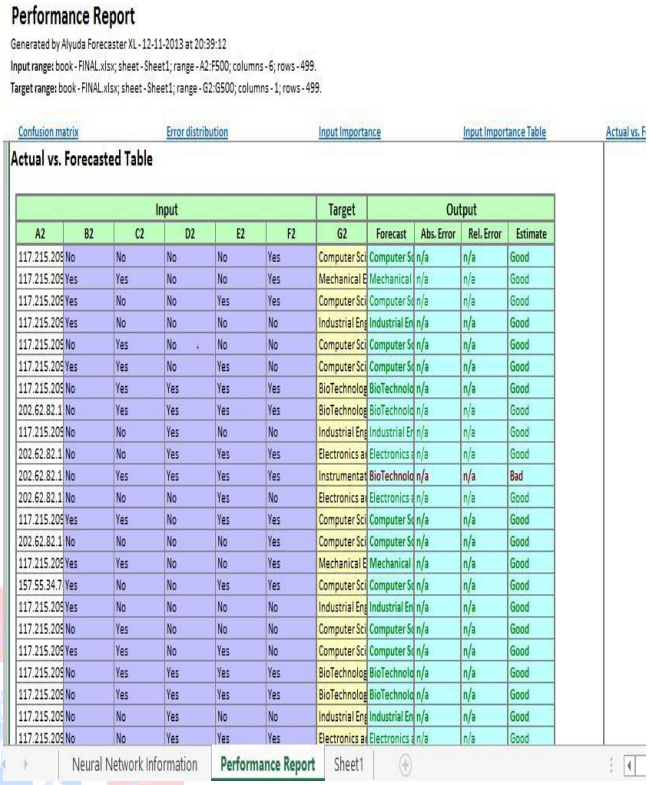
These steps are followed to solve the problem

i) Requirements realization

Using a simple pearl script over the college website server, we could access all the information about the user, the IP address, what the user has searched for, what were different links that he clicked to?

ii) Requirement filtering:

Random data, IP address that repeat with same requirement, infeasible requirement; invalid searches all were to be eliminated. Based on the time of search, search engine system OS used, URL's we need to filter our data.


Performance Report

Generated by Alyuda Forecaster XL - 12-11-2013 at 20:39:12

Input range: book - FINAL.xlsx; sheet - Sheet1; range - A2:F500; columns - 6; rows - 499.

Target range: book - FINAL.xlsx; sheet - Sheet1; range - G2:G500; columns - 1; rows - 499.

Confusion matrix | Error distribution | Input Importance | Input Importance Table | Actual vs. F

Actual vs. Forecasted Table

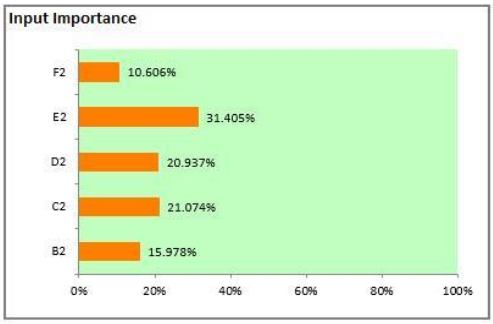
Input						Target	Output			
A2	B2	C2	D2	E2	F2	G2	Forecast	Abs. Error	Rel. Error	Estimate
117.215.205	No	No	No	No	Yes	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	Yes	No	No	Yes	Mechanical E	Mechanical	n/a	n/a	Good
117.215.205	Yes	No	No	Yes	Yes	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	No	No	No	No	Industrial Eng	Industrial En	n/a	n/a	Good
117.215.205	No	Yes	No	No	No	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	Yes	No	Yes	No	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	No	Yes	Yes	Yes	Yes	BioTechnolog	BioTechnolo	n/a	n/a	Good
202.62.82.1	No	Yes	Yes	Yes	Yes	BioTechnolog	BioTechnolo	n/a	n/a	Good
117.215.205	No	No	Yes	No	No	Industrial Eng	Industrial En	n/a	n/a	Good
202.62.82.1	No	No	Yes	Yes	Yes	Electronics a	Electronics a	n/a	n/a	Good
202.62.82.1	No	Yes	Yes	Yes	Yes	Instrumentat	BioTechnolo	n/a	n/a	Bad
202.62.82.1	No	No	No	Yes	No	Electronics a	Electronics a	n/a	n/a	Good
117.215.205	Yes	Yes	No	Yes	Yes	Computer Sci	Computer Sc	n/a	n/a	Good
202.62.82.1	No	No	No	No	Yes	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	Yes	No	No	Yes	Mechanical E	Mechanical	n/a	n/a	Good
157.55.34.7	Yes	No	No	Yes	Yes	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	No	No	No	No	Industrial Eng	Industrial En	n/a	n/a	Good
117.215.205	No	Yes	No	No	No	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	Yes	Yes	No	Yes	No	Computer Sci	Computer Sc	n/a	n/a	Good
117.215.205	No	Yes	Yes	Yes	Yes	BioTechnolog	BioTechnolo	n/a	n/a	Good
117.215.205	No	Yes	Yes	Yes	Yes	BioTechnolog	BioTechnolo	n/a	n/a	Good
117.215.205	No	No	Yes	No	No	Industrial Eng	Industrial En	n/a	n/a	Good
117.215.205	No	No	Yes	Yes	Yes	Electronics a	Electronics a	n/a	n/a	Good

Neural Network Information | Performance Report | Sheet1

iii) Data processing:

a) The location of the user can be found out using different data mining techniques.

b) Application of neural networks over filtered data helps us in trend analysis.



Input Importance Table

Input	Value, %
B2	15.978
C2	21.074
D2	20.937
E2	31.405
F2	10.606

iv) Data presentation:

The trend analysis gives the data output in a pattern of its own. This has to be converted into a desirable format, the trend has to be validated and then the report is to be prepared[6].

CONCLUSION OF THE FUTURE WEB:

Benefits are plenty with the RE process model

i) It is simple and easy process.

ii) The steps involved are not complex, they are the process that are in current demand.

iii) Rapid software developments are also possible since the increments are based on time and priority.

Many different steps can be added to this skeletal structure of RE process. One such major step is that the use of feature vector, which maps between different user spaces. The RE process is always an ongoing process. For any organization or institution which consists of network oriented designs. This RE model works out the best.

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