A review paper on cocomo model

Gajender pal
Manish kumar
Kuldeep barala
Dce, ggn

Abstract:- ***The COCOMO Model is well known as the currently predominate model for software cost estimation. It allows one to work from linguistic variables to estimate software project effort and schedule. This basis in linguistic variables encourages research of the COCOMO Model as a fuzzy system. As is known in fuzzy circles and is shown here, fuzzy arithmetic based on the popular fuzzy extension principle may produce unacceptable results under fuzzy multiplication. This makes fuzzy results of some computations too fuzzy to be useful. Nevertheless, in the case of software cost estimation using COCOMO, we find and show that this characteristic of fuzzy arithmetic may be used to advantage.***

Keywords:- ***COCOMO model, cost estimation,***

I. INTRODUCTION :-

This paper is concerned with a method of improving project outcome using Constructive Cost Models (COCOMO).

Software cost estimation is essential for software project management. Accurate software estimation can provide good support for the decision-making process like the accurate assessment of costs can help the organization to better analyse the project and effectively manage the software development process, thus significantly reducing the risk. Once the planning is too pessimistic, it may lose business opportunities, but too optimistic planning can cause significant loss.

In this paper, COCOMO model used the most frequently and widely used genetic algorithm and ant colony optimization approach for optimizing the current coefficients that estimate the optimized predictive effort required for the development of software project. Genetic algorithms and ant colony optimization are optimization algorithms in the evolutionary computing techniques and proposed in 1975 by a scientist Holland. It is a natural heuristic algorithm that is used to find exact and approximate solutions. Algorithm is based on iterative improvement of current solution, but a solution set is used instead of one solution.

II. COCOMO MODEL :-

A project manager needs to clearly identify the cost estimate of software development so that he/she can evaluate the project progress against expected budget, expected schedule and potentially improve resource utilization in. It was found that the main cost driver for software development is the effort, where effort is translated into cost. The primary element which affects the effort estimation is the developed kilo line of code (KLOC). The KLOC include all program instructions and formal statements. Many software cost estimation models where

proposed to help in providing a high quality estimate to assist project manager in making accurate decision about their projects.

E = a(KLOC)b (1)

E presents the software effort computed in man-months. The values of the parameters a and b depend mainly on the class of software project. Software projects were classified based on the complexity of the project into three categories.

They are:

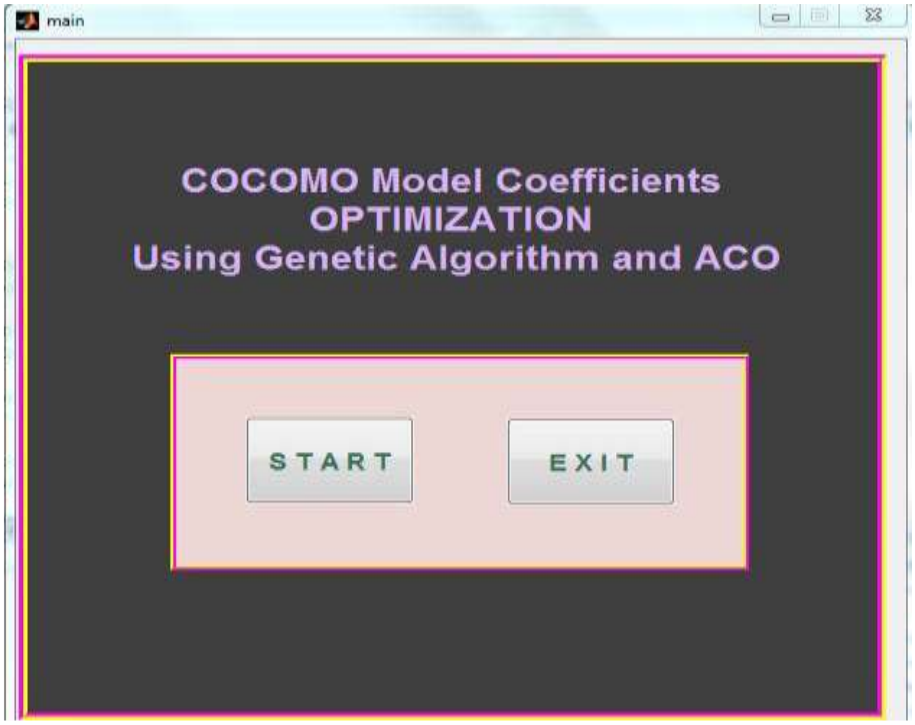
• Organic

• Semidetached

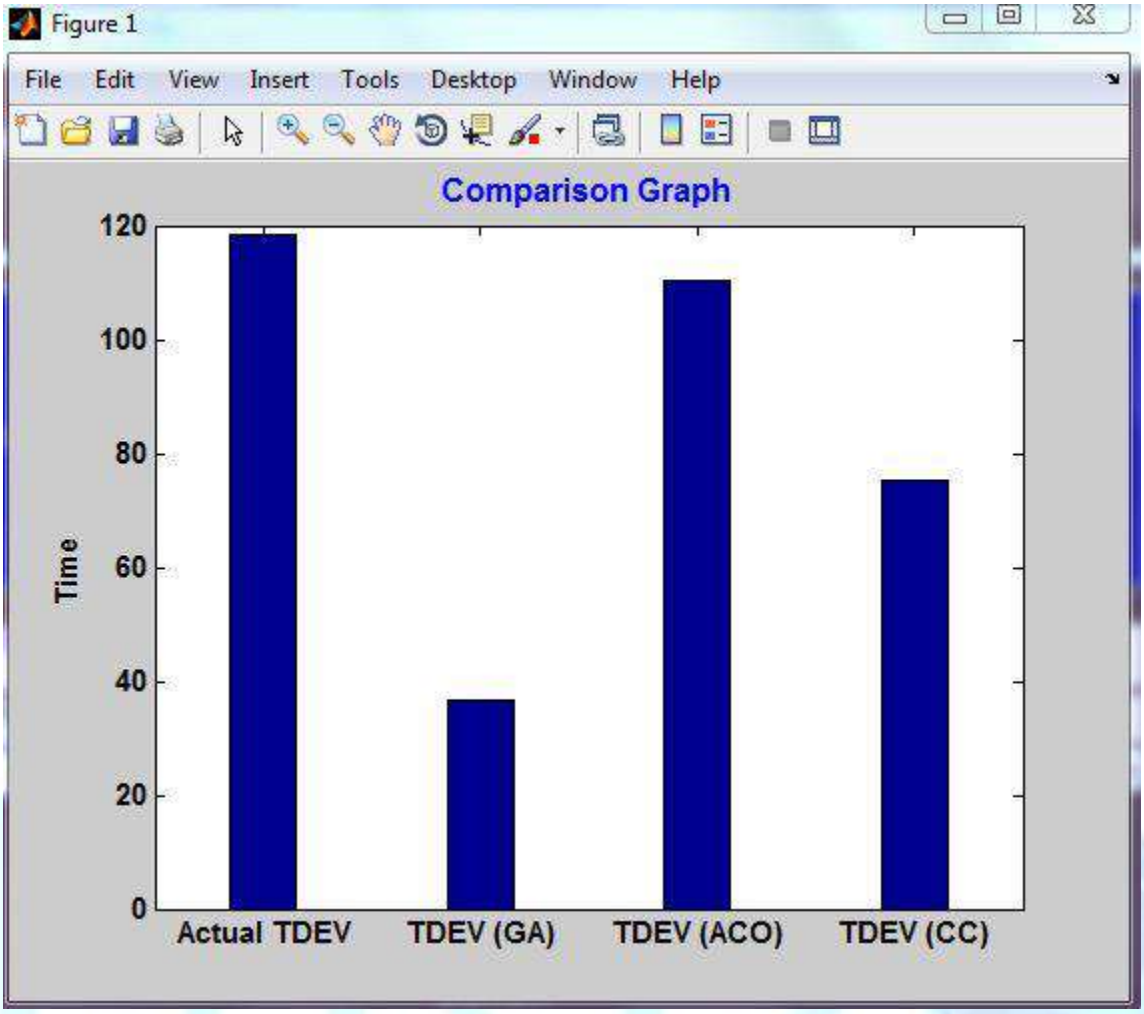
• Embedded

Table1. Basic COCOMO Models

A. Model name	*B. Effort (E)*	*C. Time(D)*
D. Organic Model	*E. E = 2.4(KLOC)1.05*	*F. D = 2.5(E)0.38*
G. Semi-Detached Model	*H. E= 3.0(KLOC)1.12*	*I. D = 2.5(E)0.35*
J. Embedded Model	*K. E = 3.6(KLOC)1.20*	*L. D = 2.5(E)0.32*


main
COCOMO Model Coefficients
OPTIMIZATION
Using Genetic Algorithm and ACO
START
EXIT


cocomo
The Optimization of COCOMO Model Coefficients
Using Genetic Algorithms and ACO
DISPLAY
Less than 50 KLOC
50 - 300 KLOC
Over 300 KLOC
Organic Projects
Semidetached Projects
Embedded Projects
Select Project
Select Project
Select Project
A
Select
Select
DONE!!!
Development Time
57.7457
Estimate Cost
3101
RESET
EXIT
Effort
33
KLOC
31
Actual TDEV
57.7457
Calculated TDEV (GA)
50.5972
Calculated TDEV (ACO)
67.4525
Calculated TDEV (CC)
26.9387



IV. CONCLUSION :-

This research indicates directions for further research. The proposed framework can be analyzed in terms of feasibility and acceptance in the industry. Trying to improve the performance of existing methods and introducing the new methods for estimation based on today‟s software project requirements can be future works in this area. So the research is on the way to combine different techniques for calculating the best estimate. According to the findings of the research, it should be stated that having the appropriate statistical data describing the software development projects, genetic algorithms and ant colony optimization can be used to optimize the COCOMO model coefficients. The objective of this research was to optimize the COCOMO model coefficients using the genetic algorithms and ant colony optimization. The task of the COCOMO coefficient optimization is not new; different methods such as neural networks, fuzzy algorithms, object-oriented methods etc. were applied to it by a number of scientists.

REFERENCES :-

[1] Maged A. Yahya, Rodina Ahmad, Sai Peck Lee, “Effects of Software Process Maturity on COCOMOII‟s Effort Estimation from CMMI Perspective” In 2008 IEEE, Department of Software Engineering, University of Malaya, pp. 255-256.

[2] Anna Galinina, Olga Burceva, Sergei Parshutin, "The Optimization of COCOMO Model Coefficients Using Genetic Algorithms" Riga Technical University, 2012/15, pp. 45-50.

[3] Kavita Choudhary, "GA Based Optimization of Software Development Effort Estimation" International Journal of Computer Science and Technology, Vol. 1, No. 1, Sep. 2010, ISSN: 0976-8491, pp. 38-40.

[4] Nancy Merlo–Schett, "Seminar on Software Cost Estimation" Requirements Engineering Research Group, Department of Computer Science, WS 2002/2003, pp. 3-19.

[5] Liming Wu, "The Comparison of the Software Cost Estimating Methods" University of Calgary, wul@cpsc.ucalgary.ca, pp. 2 -12.

[6] research paper by
Anshu Sharma
Vishali *
Suchika Malik

[7] R. Chandrasekaran and R.-V. Kumar, On the Estimation of the Software Effort and Schedule using Constructive Cost Model – II and Functional Point Analysis, Vol. 44, Department of Statistics, Tambaram: 2012, pp. 38-44.

[8] J. Horn, N. Nafpliotis and E. Goldberg, A niched Pareto genetic algorithm for multiobjective optimization. Orlando, USA: IEEE; 1994, pp. 82-87. [4] X. Huang, D. Ho, J. Ren, L.F. Capretz, Improving the COCOMO model using a neuro-fuzzy approach. Vol. 7, Applied Soft Computing, 2007, pp. 29-40.

[9] A. Kaushik and A. Chauhan, COCOMO Estimates Using Neural Networks, Vol. 9, Intelligent Systems and Applications, Delhi: Modern Education and Computer Science Press, 2012, pp. 22-28.

[10] Y. Miyazaki, K. Mori, COCOMO evaluation and tailoring. Proc. Eighth Int. Conf. Soft. Eng., London, UK, 1985, pp. 292-299.