

Retracted Note

(RETRACTED) The development of Newton's method by enhancing the starting point

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ABSTRACT

In general, nonlinear problems cannot be solved analytically. A special theory or method is needed to simplify calculations. Many problems that are too complex, an exact solution is needed to support numerical solution. There are many numerical methods that can be used to solve nonlinear problems, including the Bisection, Secant and Newton methods, also known as the Newton-Raphson method. However, these methods cannot be used for large-scale of nonlinear programming problems, for example the Newton-Raphson method which does not always converge if it takes the wrong initial value. The Newton-Raphson method is widely used to find approximations to the roots of real functions. However, the Newton-Raphson method does not always converge if it takes the wrong initial value. Therefore, it is necessary to develop the Newton-Raphson method without using other methods in order to have a higher convergence. This research is a literature study compiled based on literature references with the initial step of understanding problems that appear from the use of Newton's method, it is based on the problem of divergence or oscillation. Newton's method was developed without modification of other methods, but took two starting points. Then prove the super-quadratic convergence of the proposed method by extending the Taylor expansion and giving or assuming the error rate. After that, the stability test of the proposed model is carried out and provides an example of the application by solving the root search using Newton's method and the proposed method can be seen as a comparison.

Keywords: development; newton's method; newton-raphson; starting point

REASON FOR RETRACTION (FEBRUARY 01st, 2024):

This article has been retracted by the editors due to publication ethics misconduct by authors that the authors did not have ownership of the data that they report. Ismi Ratin Nabiyah as a corresponding Author of the article and as the representative of all authors, has asked the editor to retracted this article and recognize the mistakes for him.