

CHAPTER I

INTRODUCTION

1.1 Background

In mathematics there are some of equations and functions. Equation and function also have several kinds of type. One of the type is Polynomial equation. Polynomial equation is a function of an algebraic simple class, which is generally represented in the form : $f(x) = ax^n+bx^{n-1}+cx^{n-2}+....+qx+r$. Where n is polynomial degree and a,b,c,. . . ,q,r is constants of polynomial. Calculated value is the root of the equation. Thus the definition of the root of the equation is the value of x in the equation of the function $f(x) = 0$.

Polynomial order two use some formulas to determine or find the root of the equation. ABC formula or factorize the equation. The easiest one is ABC formula. But the polynomial equation order three or more doesn't have any formula to find the real root of the equation. To find the root of that equation, some numerical approach and method must be done. Some methods that can be used are bisection method, graphic method, secant method, Newton-Raphson method and etc.

This project provides a way to find polynomial equation root order three or more. Genetic algorithm will help us to find the root of polynomial equation. This algorithm is chosen because it is one of the best optimization algorithm which provide best solution.

1.2 Scope

This project will develop a program using Java programming language, and use Genetic algorithm. This program is used to find root of polynomial equation order three or more. The user can give or input the function and the number of accuracy to the program. And the program can show the root of the polynomial equation and all of possible answer and the fitness function for

each possible root.

1.3 Objective

The project was created with Java Programming Language. The main algorithm is genetic algorithm to find the best solution of a polynomial equation.

The purpose of this application :

1. This project is created to implement Genetic Algorithm in order to find the root of a polynomial equation.
2. Find complex root of polynomial equation with high-level accuracy.
3. Test completion suces rate.