

Praktikum Algoritma Genetika

Mengulas dan menyajikan dalam presentasi di kelas. Laporan dalam bentuk PPT. Cek Assignment di GC.

WAJIB menambahkan halaman referensi di bagian akhir

Absen 1-4

1. Pengenalan algoritma genetika dan mengimplementasikan algoritma genetika from scratch menggunakan **Python**

Simple Genetic Algorithm From Scratch in Python

By Jason Brownlee

<https://machinelearningmastery.com/simple-genetic-algorithm-from-scratch-in-python/>

Materi:

- a. Genetic Algorithm
- b. Genetic Algorithm From Scratch
- c. Genetic Algorithm for OneMax
- d. Genetic Algorithm for Continuous Function Optimization

Absen 5-8

2. Pengenalan algoritma genetika dan mengimplementasikan algoritma genetika from scratch menggunakan **Java**

Introduction to Genetic Algorithms — Including Example Code

By Vijini Mallawaarachchi

<https://towardsdatascience.com/introduction-to-genetic-algorithms-including-example-code-e396e98d8bf3#:~:text=A%20genetic%20algorithm%20is%20a,offspring%20of%20the%20next%20generation.>

Materi:

- a. Genetic Algorithm
- b. Example Implementation in Java
- c. Studi kasus individuals with five 1s

Absen 9-12

3. Pengenalan algoritma genetika dan mengimplementasikan algoritma genetika from scratch menggunakan **Python**

Genetic Algorithms Explained : A Python Implementation

<https://hackernoon.com/genetic-algorithms-explained-a-python-implementation-sd4w374i>

By Luiz Rosa

Materi:

- a. Genetic Algorithm
- b. Example Implementation in Python
- c. Studi kasus persamaan sinus

Absen 13-16

4. Pypi: Menggunakan Python Library yang menerapkan algoritma genetika

geneticalgorithm

<https://github.com/rmsolgi/geneticalgorithm>

<https://pypi.org/project/geneticalgorithm/#description>

By rmsolgi

Materi:

- a. geneticalgorithm is a Python library distributed on [Pypi](#) for implementing standard and elitist [genetic-algorithm](#) (GA).
- b. This package solves continuous, [combinatorial](#) and mixed [optimization](#) problems with continuous, discrete, and mixed variables.
- c. It provides an easy implementation of genetic-algorithm (GA) in Python.
 - A simple example with real variables $f(X)=x_1+x_2+x_3$
 - The simple example with integer variables $f(X)=x_1+x_2+x_3$
 - The simple example with Boolean variables
 - The simple example with mixed variables

Absen 17-20

5. PyGAD: Menggunakan Python Library yang menerapkan algoritma genetika

Adaptive Mutation in Genetic Algorithm with Python Examples

<https://neptune.ai/blog/adaptive-mutation-in-genetic-algorithm-with-python-examples>

<https://pygad.readthedocs.io/en/latest/>

by Ahmed Gad

Materi:

The genetic algorithm is a popular evolutionary algorithm. It uses Darwin's theory of natural evolution to solve complex problems in computer science. But, to do so, the algorithm's parameters need a bit of adjusting.

One of the key parameters is mutation. It makes random changes in the chromosomes (i.e. solutions) in order to increase quality (i.e. fitness). The mutation is applied to a fixed number of genes. Traditionally, the same number of genes are mutated across all chromosomes, regardless of their fitness.

In this tutorial, **we'll see why mutation with a fixed number of genes is bad, and how to replace it with adaptive mutation.** Using the PyGAD Python 3 library, we'll discuss a few examples that use both random and adaptive mutation.

Absen 21-24

6. Menyelesaikan permasalahan Travelling Salesman Problem menggunakan algoritma genetika.
Evolution of a salesman: A complete genetic algorithm tutorial for Python
By Eric Stoltz
<https://towardsdatascience.com/evolution-of-a-salesman-a-complete-genetic-algorithm-tutorial-for-python-6fe5d2b3ca35>

Absen 25-29

7. Sajikan problem-problem yang bisa diselesaikan dengan GA.
Contoh referensi:
Introduction to Genetic Algorithm & their application in data science
By SHUBHAM_JAIN
<https://www.analyticsvidhya.com/blog/2017/07/introduction-to-genetic-algorithm/>
Cari referensi lain untuk memperkaya ide aplikasi penerapan Genetic Algorithm.