

**ALGORITMA OPTIMASI *SPIRAL DYNAMICS* MENGGUNAKAN
BAHASA PEMROGRAMAN R UNTUK DNA BARCODING**

SKRIPSI

Diajukan untuk Memenuhi Sebagian dari
Syarat Memperoleh Gelar Sarjana Komputer
Program Studi Ilmu Komputer



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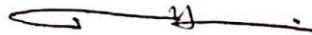
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ALGORITMA OPTIMASI *SPIRAL DYNAMICS* MENGGUNAKAN BAHASA PEMROGRAMAN R UNTUK *DNA BARCODING*

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ABSTRAK

Pencarian kecocokan antar sekuens yang spesifik dan akurat pada banyak sekuens *DNA* membutuhkan ketelitian dan waktu yang cukup lama. Penelitian ini dilakukan untuk membuat sebuah model komputasi yang digunakan untuk pencarian sebuah *barcoding DNA* pada sekumpulan sekuens *DNA*. Untuk hasil yang lebih optimal maka penulis melakukan implementasi dengan menggunakan bantuan algoritma optimasi *Spiral dynamic*. Data yang digunakan merupakan beberapa kumpulan sekuens *DNA* tanaman yang diunduh dari laman NCBI. Penelitian ini menghasilkan model pencarian *DNA barcode* dengan melihat indeks posisi terbaik yang memiliki persentase kecocokan terbaik dari setiap sekuens. Selain itu penelitian ini menunjukkan adanya pergerakan hasil persentase kecocokan sekuens *DNA* yang lebih baik dan adanya peningkatan waktu komputasi tergantung dari jumlah sekuens, jumlah iterasi, jumlah dimensi *spiral dynamic*, jumlah populasi indeks awal, tetapi tidak mempengaruhi hasil akhir yang mendekati satu sama lainnya.

Kata Kunci: *DNA, motif discovery, optimization, plant, spiral dynamic*

**OPTIMIZATION SPIRAL DYNAMICS ALGORITHM USING R
PROGRAMMING LANGUAGE FOR DNA BARCODING**

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ABSTRACT

The search for compatibility between specific and accurate sequences in many DNA sequences required accuracy and a considerable amount of time. Research was conducted to create a computational model used to search a DNA barcoding in a set of DNA sequences. For more optimal results, the author proceed to conduct research with the help of optimization spiral dynamics algorithm. The data used were a collection of plant DNA sequences downloaded from the NCBI website. This study produced a DNA barcode search model by looking at the best position index which has the best percentage of matches in each sequence. The results of this study revealed a movement in the results of a better percentage of DNA sequences. Moreover, the results pointed out an increase in computational time depending on the number of sequences, the number of iterations, the number of dimensions of spiral dynamics, and the number of population of the initial index only it does not affect the final results that are close to each other.

Keyword: DNA, motif discovery, optimization, plant, spiral dynamics

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