

## Feature Extraction Technique for Prediction the Antigenic Variants of the Influenza Virus

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**Abstract :** In genetics, the impact of neighboring amino acids on a target site is referred as the nearest-neighbor effect or simply neighbor effect. In this paper, a new method called wavelet particle decomposition representing the one-dimensional neighbor effect using wavelet packet decomposition is proposed. The main idea lies in known dependence of wavelet packet sub-bands on location and order of neighboring samples. The method decomposes the value of a signal sample into small values called particles that represent a part of the neighbor effect information. The results have shown that the information obtained from the particle decomposition can be used to create better model variables or features. As an example, the approach has been applied to improve the correlation of test and reference sequence distance with titer in the hemagglutination inhibition assay.

**Keywords :** antigenic variants, neighbor effect, wavelet packet, wavelet particle decomposition

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