

Title: An LSTM network-based model with attention techniques for predicting linear T-cell epitopes of the hepatitis C virus

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Abstract: In this research, we explain comprehensive industrial and innovation results on using an artificial neural network (ANN) method to improve the performance of microstrip patch antennas for 5G, indoor-outdoor, and Ku band uses. To determine if an antenna is appropriate, this article discusses multiple methods, one of which is to do a simulation using validating software like high frequency structure simulator (HFSS) and Altair Feko. Based on the Rogers RT 5880 substrate, the antenna is constructed. There is a loss tangent of 0.0009 and its dimensions are 17.1053 mm in length and 16 mm in width. Its dielectric constant is 2.2. Despite its small size, it boasts an impressive maximum efficiency of almost 90% and a gain of approximately 8 dB. As an indicator of ANN model performance, we may look at the R-squared value (99%), the mean square error (MSE), which is approximately 0.0015, and the confidence interval (99%). The ANN models are the most accurate and have the lowest error rate when it comes to predicting efficiency and gain. The suggested antenna is a promising contender for the targeted Ku band, indoor/outdoor, and 5G uses, as verified by the clustering of computer simulation technology (CST), HFSS, and Altair Feko simulated results with the measured and predicted outcomes of ANN approach

Keywords: 5G; antenna; artificial neural network; industrial and innovation; satellite; tri-band;

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