Performance Analysis of Adaptive Beamforming in a MIMO-millimeter Wave 5G Heterogeneous Wireless Network using Machine Learning

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Abstract

Beamforming (BF) always guides to determine the quality of received signal by an antenna array using Signal-to-Noise-Interference Ratio (SINR) in cellular base stations. This paper will help in the installation of current heterogeneous wireless networks. Here, adaptive BF is implemented on the Machine Learning (ML) platform. The four ML methods to estimate the SINR of Multiple-Input-Multiple-Output (MIMO-mm-Wave) 5G wireless network are explored. The significant BF features are used in predicting the SINR. The cross-validation experiment is performed to assess the robustness of the best predictive method. The performance analysis parameters' result shows the maximum value of accuracy, in value having the acceptable error on the data set.

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Beamforming determines the quality of received signal by an antenna array using Signal-to-Noise-Interference Ratio (SINR) in cellular base stations. This paper will help in the installation of current heterogeneous wireless networks. Here, adaptive BF is implemented on the Machine Learning (ML) platform. The applicable ML methods to estimate the SINR of Multiple-Input-Multiple-Output (MIMO-mm-Wave) 5G wireless network are explored. The significant BF features are used in predicting the SINR. The cross-validation experiment is performed to assess the robustness of the best predictive method. The performance analysis parameters' result shows the maximum value of accuracy, in value having the acceptable error on the data set.

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