A Survey on Applications of Multi Layer Perceptron Neural Networks in DOA Estimation for Smart Antennas

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Abstract

Smart antennas use antenna arrays with signal processing algorithms for identifying signals spatially. The direction of arrival (DOA) estimation has a significant role in the implementation of a smart antenna. The conventional and super resolution methods have been used for DOA estimation applications for a long time. These methods have been quite efficient. However, some of them have computational complexities associated with them. Besides, these methods exhibit limited performance in dealing with the correlated signals. Such reasons limit their suitability for real time applications. Neural networks are non linear and use simple mathematical operators. They map the non linear behavior of smart antennas and perform DOA estimations accurately with considerable time reduction. The multi layer perceptron (MLP) based neural networks have demonstrated their capability of estimating DOAs very effectively even for correlated signals.

References
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Index Terms

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Signal Processing
Keywords
Smart antenna  Neural network (NN)  Direction of Arrival (DOA)  Multi layer perceptron (MLP).