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Abstract

Direction-of-Arrival (DOA) estimation plays a vital role in many applications. Beamforming is the most prominent technique to estimate DOA. In this survey, a study of various beamforming techniques and algorithms to estimate the direction of arrival of a signal is made. An assessment on the background robust algorithms using Nyquist sampling rate and its Compressive sensing alternative is done. It is known that Bearing estimation algorithms obtain only a small number of direction of arrivals (DOAs) within the entire angle domain, when the sources are spatially sparse. Hence, it may be concluded that, the methods those specifically exploits this spatial sparsity property is advantageous. These methods use a very small number of measurements in the form of random projections of the sensor data along with one full waveform recording at one of the sensors.

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Index Terms

Computer Science Signal Processing

Keywords

Beamforming Direction-of-Arrival Array processing MVDR MUSIC Root-MUSIC

ESPRIT

Spatial sparsity

Compressive Sensing