

INTEGRATED ADAPTIVE CONTROL OF SMART ANTENNA – INTERFERENCE REJECTION AND FAILURE CORRECTION

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Abstract

Ingombri e dislocazione di una Smart Antennas non permettono una manutenzione manuale e continua, risulta quindi necessario procedere in modo non supervisionato ad una correzione automatica di eventuali "failure" di elementi della stessa. Obiettivo del presente progetto è quello di integrare la strategia di BEAMFORMING ADATTIVO con quelle di ADAPTIVE FAILURE CORRECTION. Allo stato attuale, in corrispondenza delle variazioni temporali dello scenario di interferenza, la strategia di controllo adattivo provvede a modificare le fasi delle alimentazioni degli elementi della schiera in modo da "posizionare" nulli del beam pattern in corrispondenza delle direzioni di arrivo dei segnali interferenti la cui DoA (Direction of Arrival) non è nota ma la cui esistenza è verificabile da un decadimento delle prestazioni del ricevitore in termini di SINR (Signal-to-Interference-plus-Noise ratio). La presenza di "failure" di elementi dell'array non viene tenuta in considerazione e l'array viene considerato sempre integro. L'idea è quella di supporre che durante l'evoluzione temporale:

- 1) con intervalli temporali casuali;
- 2) su elementi sia in numero e locazione randomicamente differenti;

avvengano dei "malfunzionamenti"/"rotture" e quindi progettare l'algoritmo di controllo in modo che integri le facilities di beamforming adattivo con quelle di unsupervised array failure correction.

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