Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	Design of virtual antenna array for direction of arrival estimation using real antenna array system	Communications Engineering	A new technique is presented to estimate the Direction of Arrival (DOA) of the Signal of Interests (SOI [s]) using the real antenna array systems. The new technique presents two stages of the virtual antenna array transformation. In the first one, the nonuniform real planar antenna array is transformed to a uniform planar virtual array (UPVA). The resultant array consists of few ideal antenna elements which are operating within an expanded field of view. This transformation achieves small interpolation errors within a prespecified large sector size. In the second stage, the resultant UPVA is transformed to another one of a uniform linear virtual array (ULVA) consisting of much large number of sensors. This latest transformation presents a simple design and analysis of planar array which is associated with the virtual linear array. It achieves also the simple solving of the estimation problems of the signal parameters	2019	https://ieeexplore.ieee.org/document/8793364

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| 2 | Unified Technique for DOA Estimation using Real Antenna Array in presence of Environmental Objects. | | A new technique is presented to optimize the Direction of Arrival (DOA) estimation of the desired signals using a real antenna array affected by various electromagnetic (EM) effects. It is considered to be an amendment of nonconventional least squares optimization algorithm for DOA estimation. This technique uses genetic algorithm procedures as tools to randomize the selection of receiving elements through real uniform linear array and optimizing a predefined cost function to avoid unwanted received multipath components. This idea is the key of the new technique to minimize the probability of fine and gross errors which is considered as a cost function. So, we can get rid off the resultant spectrum's distortion for DOA estimation by using the results of this unified technique in hardly EM affected signals' environment. | 2011 | http://www.ijarcs.info/index.php/Ijarcs/article/view/856 |

| 3 | Direction of Arrival Estimation Using Gravitational Search Algorithm for Real Antenna Array Systems | | In this Paper, a new proposed technique is introduced to correctly estimate Direction of Arrival (DOA) spectrum of desired signals using real antenna array system. This technique firstly depends on a virtual transformation of a Real Uniform Linear Array (RULA) to another Virtual Uniform Circular Array (VUCA). To reduce the various Electromagnetic (EM) effects at the RULA signals' environment, this preprocessing stage transforms the induced voltages in the RULA to an equivalent set of produced voltages in a VUCA. In the second stage of the new technique, a recent proposed optimization algorithm called Gravitational Search Algorithm (GSA) is applied to optimize the DOA spectrum for the VUCA. The new overall technique is very simple to be applied for real antenna array systems. The simulation results show how the new combined algorithm improves the DOA estimation of the desired signals using real antenna array elements. | 2016 | https://scholar.google.com/ scholar?hl=en&as_sdt=0,5&cluster=1604565841198975 4079 |

| 4 | Building A Mathematical Model for Allocation Problem of an Attack-Defense Game | | In the attack defense game, the attacker (player1) moves and allocates his resources (targets) to attack valuable assets for the defender, then the defender (player2) moves and allocates his resources (killing elements) to protect his defended assets. The task of the defender to allocate his killing elements is not far from to be trivial. A functional overview of the defender's decision support system will be shown in this work. Once the threat value for each target (resources of player1) has been estimated by the defender's decision support system, the defender's allocation problems appear. In this paper, a bi-objective model for the defender's allocation problem is proposed. The first objective is to minimize the estimated total value of surviving targets and the second objective is to minimize the cost of the defender's killing elements. | 2022 | https://ieeexplore.ieee.org/abstract/document/9855677 |

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