**Signal interferences in wireless communication**

**Abstract**

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minimize interference still remains a challenge because of the random nature of

interference. Increased co-channel and adjacent channel interference results in dropped

calls, slow data throughput, signal latency. Interference also affects non-cellular networks

such as public safety systems, air-traffic radar and others, risking lives. In order to tackle

these problems, more and more intelligent evolutionary algorithms are being explored.

However, rapid growth in this domain makes researchers unaware of the progresses made

over time. In this paper, a few types of interference namely co-channel interference,

adjacent channel interference, inter symbol interference, inter user interference, inter cell

interference and electromagnetic interference have been discussed. In general interference

can be minimized to a large extent by transmitting signals at different frequencies, at

different intervals of time. Furthermore, the optimal existing algorithms to mitigate

interference such as Zero forcing equalizer, Transmit power and window control,

Dispersion Interleaving, Channel Allocation and usage of Chemical compounds to mitigate

interference have also been discussed.

Keywords: Communication, Interference, Interference Types, Evolutionary Algorithms,

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**Introduction**

Interference is a phenomenon which modifies, or disrupts a signal as it travels from the source to the

destination via a channel. Interference also means addition of unwanted signals to the desired signal. This

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**Challenges**

Telecommunication is the lifeblood of today’s society. The technologies used for communication have undertaken a big change over the past few years but the problem of interference still overcomes, despite various technologies to mitigate interference. Finding an optimal solution is an arduous process because of the complex nature of the problem. Therefore, a perspicacious approach is needed to understand the existing problems and provide feasible solutions. Due to the difficulty to trail the rapid developments in this domain, many researchers have limited awareness of the latest techniques and algorithms. Consequently, they lean towards to focus on the current popular algorithms rather than discovering the apt ones, based on the requirements. To address this issue

**Solution**

The solution engagements a primary input transducer to collect the noise corrupted desired signal and a reference transducer to obtain noise that has a correlation to the primary input’s noise. The reference input is adaptively filtered and subtracted from the primary input to obtain the actual desired signal. The technique products leverage from achieving a sufficiently large interference-to-signal ratio on the reference antenna by placing it close to the interfering jammer. This scheme achieves a jammer reduction of 48 dB This solution similarly has the benefit of adjusting to jamming signals over an inclusive range of frequencies.

**CONCLUSION**

The analysis of interference in communication systems and the algorithms to mitigate them have received a lot of attention from researchers in the recent years and still this domain is yet to be fully explored. There are several papers that bring about an application specific explanation to this problem. This paper presents a deep insight of the different types of interference and methodologies to reduce it. The focus of this paper is not to highlight the applications of these algorithms but to provide some stimulus for understanding their scope and objectives. The preliminary understanding of these techniques would be beneficial for researchers working in this area. Depending upon the nature of the problem and its associated complexity, the apt algorithm can be chosen with the guidance provided in this paper.

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