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AI-DRIVEN DATA COMPRESSION FOR EFFICIENT SATELLITE COMMUNICATION

Abstract

In the rapidly advancing field of 'satellite communication', optimizing data transmission efficiency is important for ensuring reliable and cost-effective operations. This research paper introduces a novel approach: leveraging artificial intelligence (AI) for data compression to enhance satellite communication systems performance. Traditional methods of data compression often face limitations in effectively reducing bandwidth requirements while maintaining data integrity. Our proposed solution utilizes AI-driven algorithms made specifically for satellite communication, aiming to revolutionize data processing and transmission. By harnessing the power of AI, we seek to significantly reduce bandwidth usage without compromising data quality, thereby improving overall system efficiency. This paper discusses the design, implementation, and potential applications of AI-driven data compression techniques in satellite communication. Furthermore, it explores future advancements and broader implications for space-based data transmission systems. Through rigorous analysis and experimentation, this paper underscores the viability and effectiveness of AI-driven data compression in enhancing satellite communication capabilities, ultimately contributing to the advancement of space exploration and satellite-based technologies.