# Conclusion and Future Work

In this paper, we propose a novel Generalized Decision Feedback Equalizer (GDFE) strategy for power allocation that significantly enhances data rates and energy efficiency in low-rank channel conditions, which are particularly challenging for Extended Reality (XR) applications. Our comprehensive performance evaluation demonstrates that this approach markedly outperforms existing Wi-Fi methods, offering a promising solution for uplink communications in XR systems. Future directions include the integration of adaptive mechanisms and machine learning models to optimize power allocation dynamically, catering to real-time changes in channel conditions and further boosting the system’s performance.