Parity-bit Error Detection Targets Prescribed Error Events

Technology No. z04196

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Detects Error Events in Communication Systems

A parity-bit coding strategy detects prescribed error events when detecting error events in code words detected from data signals. The error detection code corresponds to one or more dominant error events for the communication system, thus targeting specific error events. The code provides a substantial performance gain compared to conventional parity-based post processing methods, and allows low-cost, low-power deployment of read channel processing in data recording systems. The technique can be applied to perpendicular recording systems, longitudinal recording systems and other communication systems with channels characterized by specific error events. When applied to dominant error events in perpendicular recording employing the post-Viterbi error event correction method, the performance gain is significant.

Significant Perpendicular Recording Performance Gain

Single parity codes work well for traditional longitudinal recording, but for perpendicular recording, parity-bit-based post-Viterbi error correction fails to provide a significant performance gain. Using this technique, however, the performance gain is significant when applied to perpendicular recording systems employing the standard post-Viterbi error-event correction method. In addition, conventional methods of error detection and correction typically attempt to detect and correct as many erroneous bits as possible within a code word. In contrast, this error detection coding techniques uses error detection codes targeted to particular error types to detect prescribed error events.

BENEFITS AND FEATURES:

- Parity-bit coding
- Detects prescribed error events
- Code corresponds to one or more dominant error events for the communication system
- Substantial performance gain
- Low-cost, low-power deployment of read channel processing in data recording systems
- Applies to both perpendicular and longitudinal recording systems

APPLICATIONS:

- Data communication systems
- Data recording systems
- Error detection and correction

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