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Post-Viterbi Error Correction based on Syndrome Value

Technology ID
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Category
Software & IT/Algorithms
Software & IT/Communications & Networking

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Post-Viterbi Error Correcting

A post-Viterbi error correcting method computes a set of potential error starting positions for error events based on a syndrome value corresponding to the syndrome. Next, it computes a confidence value for each of the error events at each of the potential error starting positions in the refined set, and then it corrects the most likely error event in the detected codeword based on an error event and corresponding potential error starting position having the highest confidence value.

Efficient Error Correcting Scheme

In an error correction method, a codeword is transmitted through a noisy communication channel and detected by a receiving device. An error detection code is then applied to the detected codeword to generate a syndrome. When the syndrome is not all zero, the codeword contains an error. Conventional error detection and correction attempts to detect/correct as many erroneous bits as possible within a codeword. This approach, however, is less concerned about the total number of erroneous bits it can detect and correct, and focuses instead on specific error events of a known type. In interference-dominant channels, such as high-density magnetic recording, errors tend to occur in specific patterns. While conventional codes can correct some of these frequently observed error patterns, they are not very effective in providing immunity against these error patterns. By targeting a list of known dominant error patterns that make up a very large percentage of all observed occurrences of errors, this error correction scheme becomes highly effective in correcting the frequently observed error patterns.

BENEFITS AND FEATURES:

- Computes potential error starting positions for error events
- Based on a syndrome value corresponding to the syndrome
- Corrects the most likely error event in a detected codeword
- Focuses on specific error events of a known type

APPLICATIONS:

- Interference-dominant communications
- Magnetic and optical data storage systems

Phase of Development - Concept

Interested in Licensing?
The University relies on industry partners to scale up technologies to large enough production capacity for commercial purposes. The license is available for this technology and would be for the sale, manufacture or use of products claimed by the issued patents. Please contact Kevin Nickels to share your business needs and technical interest in this error correction technology and if you are interested in licensing the technology for further research and development.

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