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(54) **SYSTEMS FOR ERROR REDUCTION OF ENCODED DATA USING NEURAL NETWORKS**

(71) Applicant: **MICRON TECHNOLOGY, INC.**, BOISE, ID (US)

(72) Inventors: **Fa-Long Luo**, San Jose, CA (US); **Jaime Cummins**, Bainbridge Island, WA (US)

(73) Assignee: **MICRON TECHNOLOGY, INC.**, BOISE, ID (US)

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(57) **ABSTRACT**

Examples described herein utilize multi-layer neural networks, such as multi-layer recurrent neural networks to estimate an error-reduced version of encoded data based on a retrieved version of encoded data (e.g., data encoded using one or more encoding techniques) from a memory. The neural networks and/or recurrent neural networks may have nonlinear mapping and distributed processing capabilities which may be advantageous in many systems employing a neural network or recurrent neural network to estimate an error-reduced version of encoded data for an error correction coding (ECC) decoder, e.g., to facilitate decoding of the error-reduced version of encoded data at the decoder. In this manner, neural networks or recurrent neural networks described herein may be used to improve or facilitate aspects of decoding at ECC decoders, e.g., by reducing errors present in encoded data due to storage or transmission.