

(12) **United States Patent**
Gottesman

(10) **Patent No.:** **US 6,614,370 B2**
(45) **Date of Patent:** **Sep. 2, 2003**

(54) **REDUNDANT COMPRESSION TECHNIQUES FOR TRANSMITTING DATA OVER DEGRADED COMMUNICATION LINKS AND/OR STORING DATA ON MEDIA SUBJECT TO DEGRADATION**

Primary Examiner—Brian Young
(74) *Attorney, Agent, or Firm*—Morgan, Lewis & Bockius LLP

(76) **Inventor:** **Oded Gottesman**, 791-D Laurel Walk, Santa Barbara, CA (US) 93117

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **10/056,891**

(22) **Filed:** **Jan. 24, 2002**

(65) **Prior Publication Data**

US 2002/0101369 A1 Aug. 1, 2002

Related U.S. Application Data

(60) Provisional application No. 60/264,494, filed on Jan. 26, 2001.

(51) **Int. Cl.⁷** **H03M 7/00**

(52) **U.S. Cl.** **341/94**

(58) **Field of Search** 341/94; 714/703; 370/241

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,487,686 B1 * 11/2002 Yamazaki 341/94

* cited by examiner

(57) **ABSTRACT**

Encoding/decoding systems and methods for use with data signals representing speech, audio, video, and/or other types of information, including, but not limited, to EKG, surround sound, seismic signals, and others. These systems and methods encode signal parameters into a plurality of frames, each frame having a predetermined number of bits. The encoder encodes signals into frames that are of longer duration than a transmission (or storage) interval, except in cases where signals may be characterized by an axis other than time, such as image or video-coded signals, wherein the encoder codes signals into frames that are larger than the coded segment. When no bits are lost during data transmission (or storage), the decoder uses the received (or retrieved) bits to reconstruct segments having a length equal to the transmission (or storage) interval. When a frame erasure occurs, the decoder uses the received (or retrieved) bits to reconstruct segments having a length that is greater than the transmission (or storage) interval. This technique reduces the need for interpolation- or extrapolation-based techniques for error concealment. The invention can also be used as an enhancement layer for standard or other prior art coding systems. In such cases, an existing coding scheme may operate as a base layer, and the present invention can be used as enhancement layer for less than ideal communication environments, by coding additional look-ahead and/or look-back parameters.

11 Claims, 16 Drawing Sheets

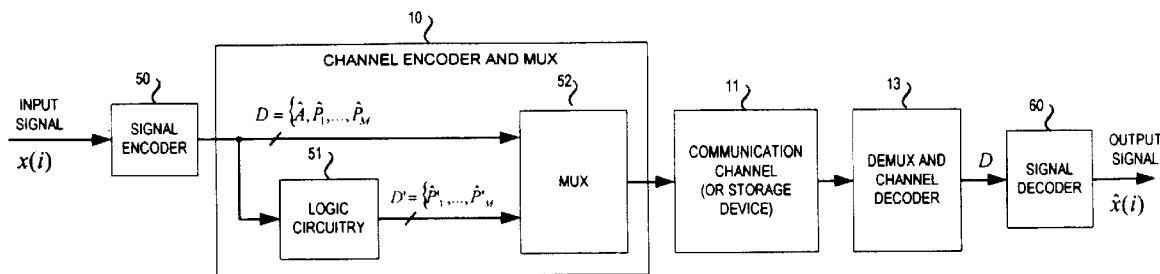


FIG. 1

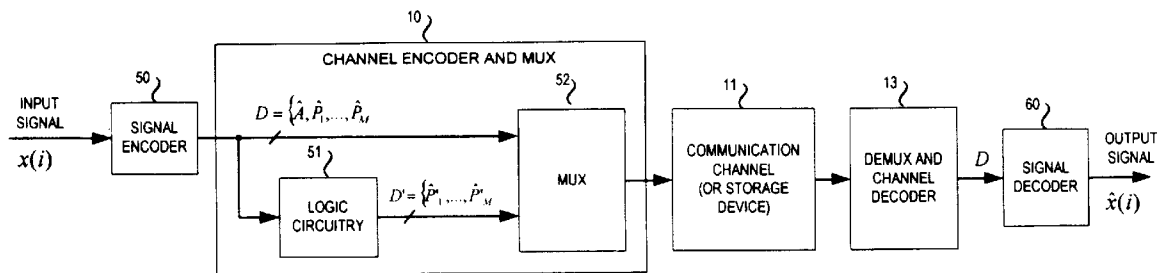


FIG. 2

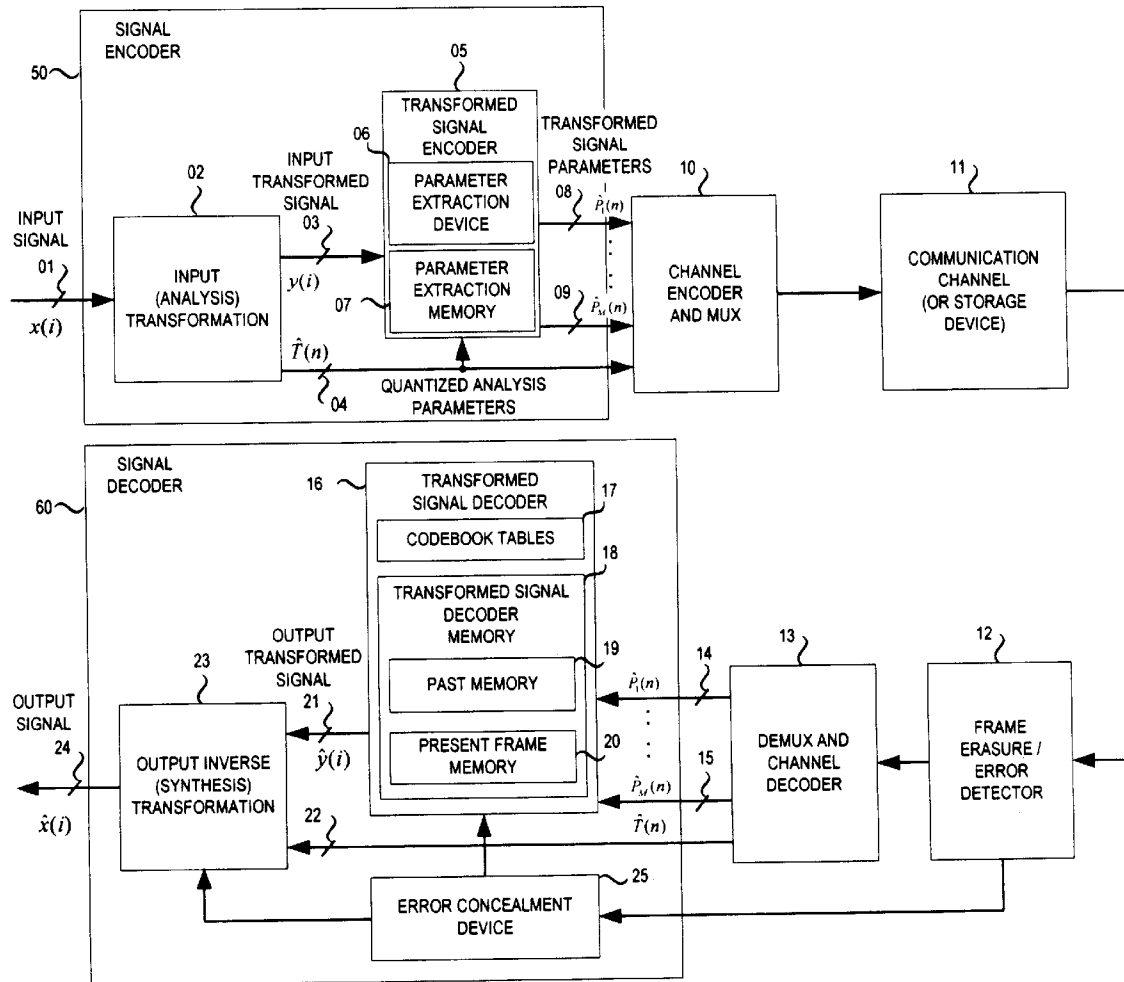


FIG. 3

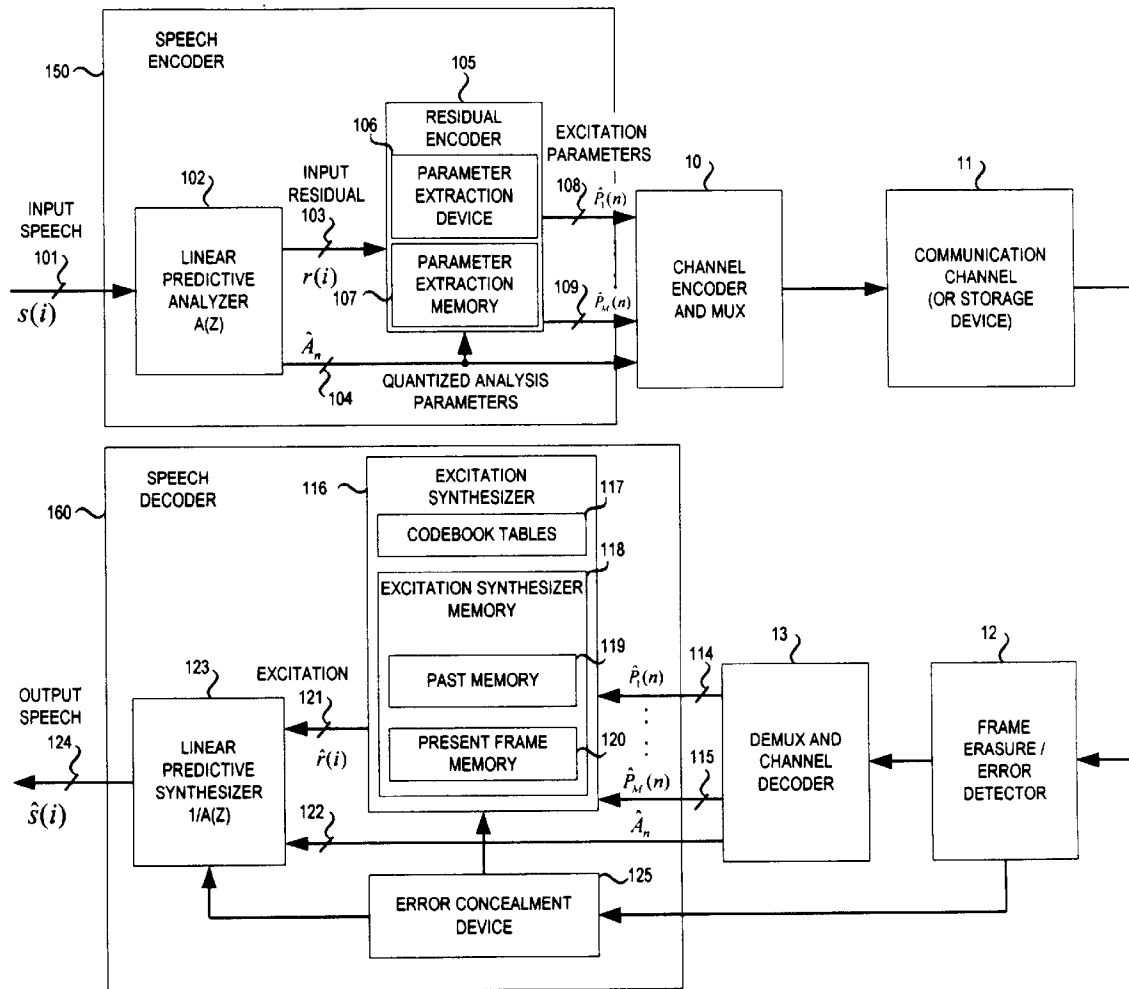
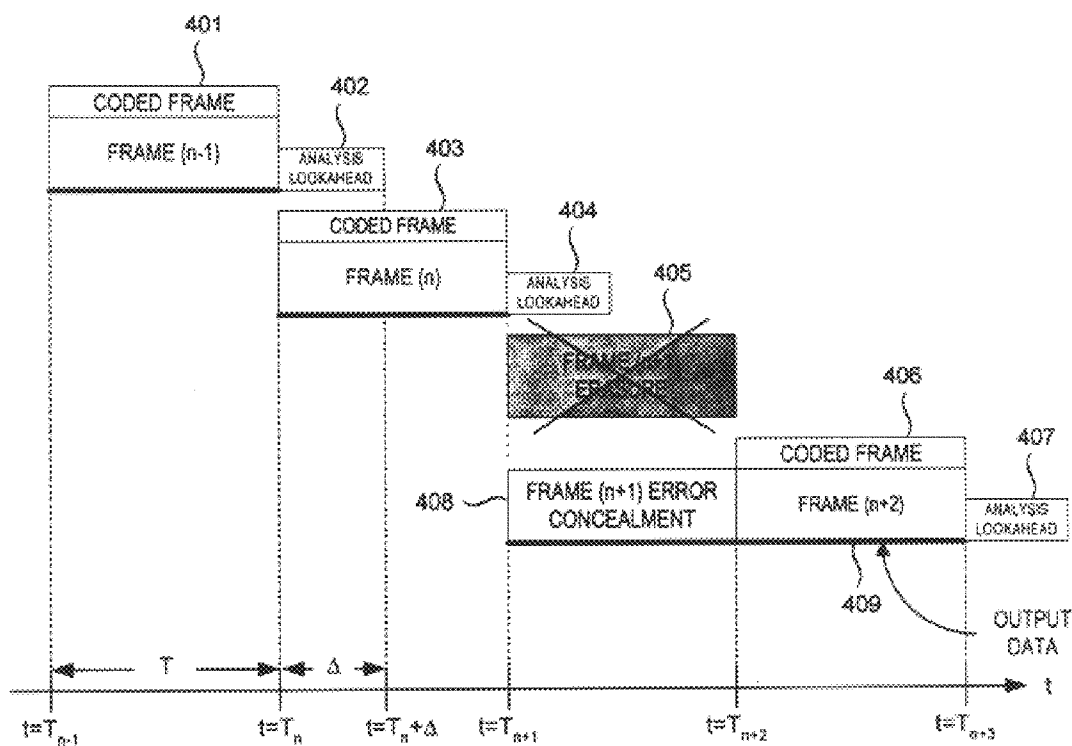


FIG. 4

PRIOR ART

NO LOOKAHEAD-CODED SECTION (FULL FRAME ERROR CONCEALMENT)



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.