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(21) International Application Number: PCT/SG99/00105 (22) International Filing Date: 26 October 1999 (26.10.99) (30) Priority Data: 9803458-0 28 October 1998 (28.10.98) SG (71) Applicant (for all designated States except US): DATAMARK TECHNOLOGIES PTE LTD. [SG/SG]; Suite 106, Innovation Centre, Block 1, 16 Nanyang Drive, Singapore 637722 (SG). (72) Inventors; and (75) Inventors/Applicants (for US only): HO, Anthony, Tung, Shuen [CA/SG]; 54H Nanyang View #09-16, Singapore 639669 (SG). TAM, Siu, Chung [SG/SG]; 78B Eng Kong Place, Singapore 599154 (SG). TAN, Siong, Chai [SG/SG]; Block 426, Fajar Road #01-545, Singapore 670426 (SG). YAP, Lian, Teck [SG/SG]; Block 312, 32 Bukit Batok Street #11-79, Singapore 650312 (SG). (74) Agents: NAMAZIE, Farah et al.; Haq & Namazie Partnership, Robinson Road, P.O. Box 765, Singapore 901515 (SG).		(81) Designated States: AU, CA, CN, ID, JP, KR, SG, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report. With amended claims.

(54) Title: METHODS OF DIGITAL STEGANOGRAPHY FOR MULTIMEDIA DATA

(57) Abstract

A lossless steganographic encoding method for secure transmission or storage of multimedia data. Primary data, such as text, image, video, audio or other digital data, is utilised in a steganographic process to encode secondary data, such as text, image, video, audio or other digital data. The primary data includes a plurality of first data elements and the secondary data includes a plurality of second data elements. For each second data element an operation is performed with a first data element so as to generate a key element as a result of the operation. The key elements may then be securely transmitted and/or stored. In preferred embodiments of the method, the primary data may be rearranged according to a predefined or random manner, or it may be resized so as to match the size of the secondary data. A complementary decoding method is disclosed, and a method of generating a pseudo-random number sequence, which may be used in the steganographic and decoding methods, is also disclosed.

