US006928181B2

(12) **United States Patent**
Brooks

(10) **Patent No.: US 6,928,181 B2**
(45) **Date of Patent: Aug. 9, 2005**

(54) **METHOD AND SYSTEM FOR BIOMETRIC RECOGNITION USING UNIQUE INTERNAL DISTINGUISHING CHARACTERISTICS**

(75) Inventor: **Juliana H. J. Brooks**, Columbus, OH (US)

(73) Assignee: **Berkshire Labs**, Havre de Grace, MD (US)

(*) 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.: **10/696,211**

(22) Filed: **Oct. 29, 2003**

(65) **Prior Publication Data**

US 2004/0052406 A1 Mar. 18, 2004

Related U.S. Application Data

(63) Continuation of application No. 08/974,781, filed on Nov. 20, 1997, now abandoned.

(51) **Int. Cl.**[7] **G06K 9/00**
(52) **U.S. Cl.** **382/115**; 340/5.82; 600/443
(58) **Field of Search** 382/115, 124, 382/207, 181, 218; 600/407, 445, 437, 443, 446; 235/380, 492; 704/246, 273; 283/68; 356/71; 340/5.1, 5.52, 5.53, 5.8, 5.81, 5.82, 5.83; 902/3, 4, 25

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,872,443 A * 3/1975 Ott 600/587
3,990,436 A * 11/1976 Ott 600/407
4,048,986 A * 9/1977 Ott 600/407
4,107,775 A * 8/1978 Ott 382/115
5,197,475 A * 3/1993 Antich et al. 600/437
5,454,045 A * 9/1995 Perkins et al. 382/181
5,456,256 A * 10/1995 Schneider et al. 600/445
5,587,533 A * 12/1996 Schneider et al. 73/614
5,647,364 A * 7/1997 Schneider et al. 600/445
5,717,776 A * 2/1998 Watanabe 382/116
5,787,187 A * 7/1998 Bouchard et al. 382/115

FOREIGN PATENT DOCUMENTS

EP 197810 * 10/1986

* cited by examiner

Primary Examiner—Samir Ahmed
(74) *Attorney, Agent, or Firm*—Mark G. Mortenson

(57) **ABSTRACT**

The present invention is a biometric recognition method and system for identifying humans and animals with acoustic scanning techniques. The invention is based upon transmitting acoustic energy through an external accessible surface to non-visible internal tissue having a unique distinguishing characteristic. A master representative pattern of the unique distinguishing characteristic is produced by the interaction of an acoustic energy beam with discontinuities and inhomogeneities within the non-visible internal tissue. The master representative pattern is used for reference and compared to a current representative pattern formed upon each attempted reentry into the system.

47 Claims, 4 Drawing Sheets