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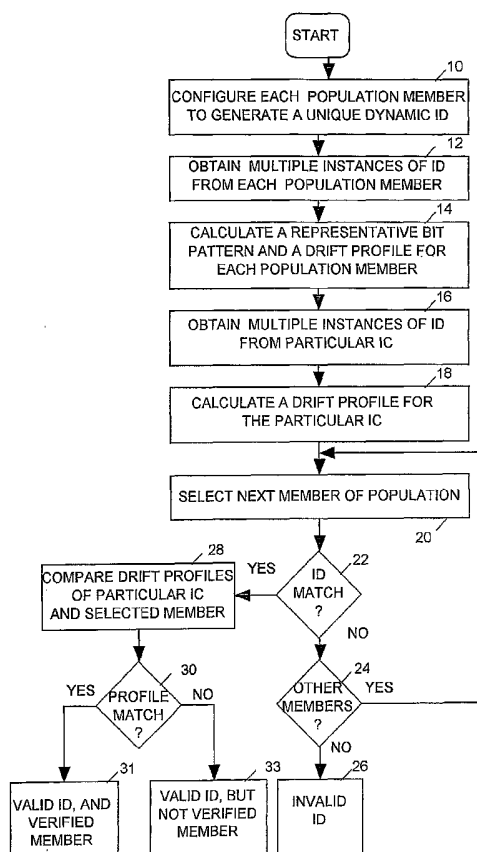
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- (71) Applicant: ICID, LLC [US/US]; 779 Talisman Drive, Palo Alto, CA 94303 (US).
- (72) Inventor: HORNG, Chi-Song; 779 Talisman Court, Palo Alto, CA 94303 (US).
- (74) Agent: SMITH-HILL, John; Smith-Hill and Bedell, P.C., Suite 104, 12670 N.W. Barnes Road, Portland, OR 97229 (US).

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[Continued on next page]

(54) Title: METHOD OF AUTHENTICATING AN OBJECT OR ENTITY USING A RANDOM BINARY ID CODE SUBJECT TO BIT DRIFT



(57) Abstract: Each object (such as for example an integrated circuit) (36, 10) of a population of similar objects is configured to generate instances of a dynamic binary identification code (ID) (38, 12) that differ from instances of IDs (38) generated by all other member objects of the population. While bits residing in most of the bit positions of the ID (38) generated by each member object of the population do not vary in state from instance-to-instance of that ID (38), bits residing in one or more of the bit positions of the ID (38) may vary (drift) in state from instance-to-instance of that ID (38). A set of instances of the ID (38) generated by each member object of the population are analyzed to construct a separate "drift profile" for each member object's ID (38) indicating for each bit position a probability that the bit position will contain a bit of a particular state (14). Thereafter, to verify that a particular object is a specific member object of the population, a set of instances of the ID generated by that particular object is analyzed to construct a drift profile for that particular object's ID. That drift profile is then compared (28) to the drift profiles of the IDs generated by the member objects of the population to determine whether the particular object is a certain specific member object of the population.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/00

US CL : 235/375, 385, 487; 716/4, 8; 702/73; 364/468.22, 468.23; 700/115-117; 713/168, 185; 717/106

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 235/375, 385, 487; 716/4, 8; 702/73; 364/468.22, 468.23; 700/115-117; 713/168, 185; 717/106

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,161,213 A (LOFSTROM) 12 December 2000 (12.12.2000), see entire document.	1-2
P, A	US 6,600,686 B2 (HUH) 29 July 2003 (29.07.2003), see entire document.	1-2
A	US 5,818,738 A (EFFING) 06 October 1998 (06.10.1998), see entire document.	1-2
A	US 5,642,307 A (JERNIGAN) 24 June 1997 (24.06.1997), see entire document.	1-2
A	US 5,350,715 A (LEE) 27 September 1994 (27.09.1994), see entire document.	1-2

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

D. I. Lee

Telephone No. 571-272-2399

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Continuation of B. FIELDS SEARCHED Item 3:

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Search Terms: (identificaiton or id), ((integrated near circuit) or IC), bit, probability , drift