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Summary

Current work: Design for Manufacturing for IC, taking care of automatic content management, through XML/XSL languages.

Recent work: System Level Design field, focusing on memory card solutions, as well as the study of right Design methodologies for SoC.

Past: design of speech-related applications for portable devices, (Palm OS-based, customs), and other applications for demonstrative purpose on prototypes of new devices.

Holds US and EU patents

Remarkable Contributions:

- Content Management System for DFM reporting
- A method for increasing the equivalent computational precision in an analog associative memory (patented);
- A proposal for the use of a fingerprint sensor device as a four button pointer;
- The development of user interface for : image storing, speech recording and speech recognition systems;
- Design of a complete SD card controller prototype;
- A proposal for the adoption of UML in the early phases of the system level design flow.

Specialties:

Design methodologies, design interoperability, design for manufacturing for IC, human interfaces;

language(C/C++, Java, Perl, TCL) , OS (Unix, PalmOs), protocols(SD and MMCARD, APDU, OMA-DRM), VLSI, application oriented themes(OCR, Speech, CAM, image); XML and related (XSL, SVG)

Prototypes

2004

Secure Digital Card Controller

define and experiment a complete System2RTL design methodology applied to smart memory systems



2000

Speech Recognition System on Palm

Development of a System On Chip device implementing as application a speech recognition device to be connected with an handheld device.
Additional goal: the possibility to implement an alternative input interface (i.e. emulating tap and keyboard) for all handheld applications



1999

Speech Recording System

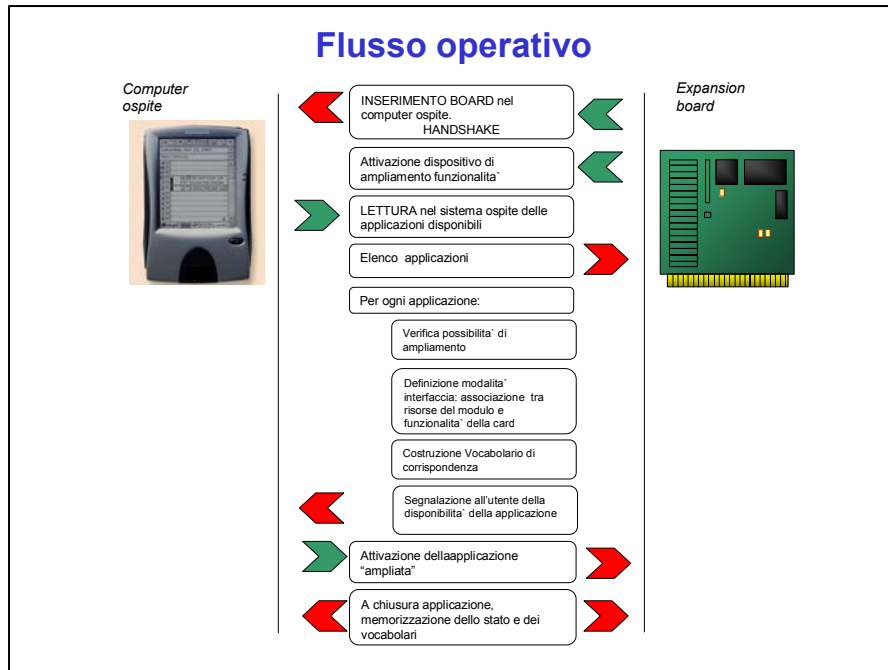
Development of User interface and Flash memory-based file system. System allows to record, listen and "edit" messages, adding streams in any position of an existing message. Data are stored on a non-volatile memory, and managed on a proprietary file system.



Patents

7 granted US patent(s) and 1 granted European patent(s)
 1 patent pending

<p>(12) United States Patent Navoni et al.</p>	<p>(10) Patent No.: US 7,036,130 B2 (45) Date of Patent: Apr. 25, 2006</p>
<p>(54) METHOD FOR EXPANDING IN FRIENDLY MANNER THE FUNCTIONALITY OF A PORTABLE ELECTRONIC DEVICE AND CORRESPONDING PORTABLE ELECTRONIC DEVICE</p>	
<p>(75) Inventors: Loris Giuseppe Navoni, Cernusco sul Naviglio (IT); Michele Borgatti, Finale Emila (IT); Lorenzo Cali', Monza (IT); Pierluigi Rolandi, Monleale (IT)</p>	<p>5,133,076 A 7/1992 Hawkins et al. 395/800 5,157,384 A * 10/1992 Greanias et al. 345/156 5,161,102 A * 11/1992 Griffin et al. 710/104 5,418,960 A * 5/1995 Munroe 713/1 5,432,938 A 7/1995 Ohashi 395/700 5,602,963 A 2/1997 Bissonnette et al. 395/2.84 5,659,665 A * 8/1997 Whelpley, Jr. 704/275 5,668,992 A * 9/1997 Hammer et al. 713/1 5,815,706 A 9/1998 Stewart et al. 395/652 5,822,565 A * 10/1998 DeRosa et al. 703/24 6,023,736 A * 2/2000 Lambeth et al. 710/10</p>
<p>(73) Assignee: STMicroelectronics S.r.l., (IT)</p>	<p>(Continued)</p>
<p>(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 663 days.</p>	<p>FOREIGN PATENT DOCUMENTS EP 0 945 792 A2 9/1999</p>
<p>(21) Appl. No.: 10/035,542</p>	<p>OTHER PUBLICATIONS Silverio, et al.; "The Merlin Communications System"; <i>IEEE Journal on Selected Areas in Communications</i>, vol. SAC-3, No. 4, Jul. 1985, pp. 584-593.</p>
<p>(22) Filed: Dec. 28, 2001</p>	
<p>(65) Prior Publication Data</p>	<p>(Continued)</p>



(12) **United States Patent**
Navoni

(10) **Patent No.:** **US 6,535,952 B1**
(45) **Date of Patent:** **Mar. 18, 2003**

(54) **METHOD FOR INCREASING THE EQUIVALENT COMPUTATIONAL PRECISION IN AN ANALOG ASSOCIATIVE MEMORY**

6,415,293 B1 * 7/2002 Navoni et al. 365/49

OTHER PUBLICATIONS

(75) Inventor: **Loris Navoni**, Cernusco Sul Naviglio (IT)

Lee et al., "Analog Floating-Gate Synapses for General-Purpose VLSI Neural Computation," IEEE, pp 654-658, Jun. 1991.*

(73) Assignee: **STMicroelectronics S.r.l.**, Agrate Brianza (IT)

Andreou et al., "Neural Architectures for Smart Memories in Analog VLSI," IEEE, pp 671-676, Aug. 1988.*

* cited by examiner

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

Primary Examiner—Matthew Kim
Assistant Examiner—Stephen Elmore
(74) *Attorney, Agent, or Firm*—Lisa K. Jorgenson; Robert Iannucci; Seed IP Law Group PLLC

(21) Appl. No.: **09/544,524**

(57) **ABSTRACT**

(22) Filed: **Apr. 6, 2000**

The equivalent computational precision in an associative memory is increased by determining the difference between the bit precision that is required in order to represent a given number in the memory and the bit precision that can be represented in a memory element of the memory, which is dictated by the inherent characteristics of the memory;

(30) **Foreign Application Priority Data**

Apr. 9, 1999 (IT) MI99A0737

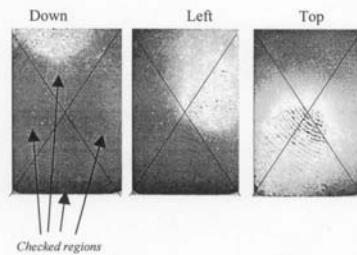
(51) **Int. Cl.⁷** **G06F 12/00**

Other items

Discharged patent proposal

ADDITIONAL USE OF TOUCHCHIP AS 4-ARROWS BUTTON

The use of the TouchChip fingerprint sensor , i.e. in a cellular phone, is limited to the identification of the user at the start of the "working session", and remain unused for the rest of the time. An alternative use of the sensor is the emulation of a 4-arrows button, with a mechanism that make a comparison of the change of capacity on four areas on the sensor surface. Comparison of the image given by the sensor determinate the direction required, and gives appropriate information to the system.



Images are on reversed side due to the registering from TouchChip

Algorithm:
 (A continous loop is performed in order to produce images from the sensor)
 Get Image from TouchChip
 Define four Regions to be checked
 Make a Summation of value of pixels in the regions
 Make a comparison between values axtracted from regions
 If higher value is above a threshold, an interrupt can be send to the system carrying information about choosen direction (this to avoid unintentional commands)

No modifications are required to the device

Many problems are open, however, despite the TouchChip is too high cost to be used exclusively as button, the fact that is already present on a device should lead the research of a more intensive use of it.

Content Management System for DFM reports

