



Digital recognition

System developed by Griaule is amongst the best in the world

Controlling the entry and exit of employees in a company, accessing bank ATMs and protecting domestic or professional computers against prying are some of the applications for fingerprint recognition software developed by Griaule, a company in Campinas, which has already won customers in the United States, Mexico, Chile, Venezuela and Israel. Recently, the company's technology for issuing passports was bought by Costa Rica, by means of the French company Oberthur, which produces this kind of document for 80 countries. This year, Griaule's technology was incorporated into the 25 thousand electronic voting machines with fingerprint readers delivered to the Supreme Electoral Court (TSE) by Procomp, one of the partner companies, planned to be used in the next elections.

The program was considered the eighth best in the world in a large-scale test – 1 billion comparisons of fingerprints – carried out in 2003 by the Nation-



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Digital reader
replaces
passwords
and name tags

al Institute of Standards and Technology (NIST), in the United States. An enviable position for a small company that competed with giants of the sector like Motorola and NEC. Some big ones, like Raytheon, came behind Griaule, the only company from the Southern Hemisphere to take part in the test. The participants selected had 21 days to complete the test. The ranking was done on the basis of the quality of the fingerprint recognition. This October, Griaule took part in a similar test carried out by the University of Bologna, in Italy. According to the company's researchers, the program should come out in third place.

In Brazil, the digital identification system is being used by the Secretari-

ats for Public Security of Tocantins, Rondônia and Goiás to issue identity cards, and by the State Traffic Department (Detran) of Pernambuco to prevent fraud in the issue of driver's licenses. The State of Tocantins was the first customer to adopt the company's software, when the Secretariat for Public Security decided to replace the imported technology used in civil and criminal identification, on account of the high cost of expanding and maintaining the database.

The system currently used captures electronically the fingerprints of the ten fingers, the photograph and the signature of each person, or permits the digitalization of this information kept

on paper. After the comparison in Griaule's system, the identity card is issued, a process that takes only ten minutes. There are already today about 1 million fingerprints registered in the database of the state secretariat. The State University of Campinas (Unicamp) has also adopted the company's digital recognition system to check the identity of the candidates in the entrance examinations, held by the institution twice a year and with about 50 thousand entrants in each.

The conquest of so many market niches is impressive, for the short time that the company, created in 2002, has been in existence. It was one of the first to be housed in the Technology-Based

Company Incubator at Unicamp (Incamp). Before that, in 1999, Griaule's two partners, electrical engineer Iron Calil Daher and computer engineer Alberto Fernandes Canedo, in those days students at the Federal University of Goiás, began to work together on the development of software components for digital recognition, one of the methods most used worldwide in biometric systems, which replace the traditional passwords with the analysis of parts of the body, such as the iris, face, hands, voice and even signature.

Access granted - Biometric authentication involves two stages. The first records the fingerprint, the image of the iris or of the face, a voice recording and other personal peculiarities. The key characteristics are then converted by using algorithms (sets of mathematical solutions and operations to resolve a problem) into a unique pattern, stored as encrypted numerical data. In practice, this means that the system does not record the photograph of the face or fingerprint, but the value that represents the biometric identity of the user. In the second stage, in order to be able to have his/her access granted, the user has to show to the system his or her biometric characteristics, which will be compared with the pattern recorded in the database.

To improve the algorithms and to perfect the processing of the information in the computers, Griaule obtained funding from FAPESP in the Small Business Innovation Research Program (PIPE) modality. The company also received financial support from the Ministry of Science and Technology's Financier of Studies and Projects (Finep), an amount of R\$ 250 thousand, for a project approved under the auspices of CT-Info, the Information Technology Sectorial Fund.

Annual sales, which were R\$ 100 thousand in 2003, are today in the region of R\$ 3 million. Exports correspond to 80% of this total, with the United States as the main market, which led the company, in February, to open a branch in San José, in the state of California, in Silicon Valley, under the direct command of Daher. Griaule has six certifications from the Federal Bureau of Investigation (FBI), the American fed-

eral police, which enables it to take part in tenders held in the United States.

"Our software is not a final product", explains André Nascimento de Paula, the company's Institutional Cooperation manager. Griaule develops software components for companies that integrate the components into a product. Called integrators, these companies take care of the final formatting of the product, according to the needs of their customers, which include small establishments, large corporations and governments.

Last year, Griaule left the incubator and went to a rented house near Unicamp. At the entrance, a digital reader installed in the wall alongside the door identifies the 20 employees, half of whom have a master's or doctor's degree. Identification works in two stages and takes no longer than two seconds. The first stage, called capture, starts when the finger is put into the identification equipment and takes one second. The second stage, the search, evaluates 30 thousand digital records in one second.

Free version - Griaule's commercial focus is wide, covering corporate and governmental customers. For the corporate customers and end consumers, the company has developed the Desktop Login, which replaces the password by the fingerprint to access the computer, the Desktop Identity, for points of sales and timekeeping control, and the Rex 2006, an access control with a digital identification reader that works in a network and permits easy integration with electric locks and turnstiles. The Desktop Identity, which has a version for free dis-

tribution by the Internet, can be installed in any institution to perfect the control and traffic of personnel. The full version also brings a development kit intended for computer engineers interested in creating new applications around the company's digital recognition technology.

The government customers can count on a program called AFIS (Automated Fingerprint Identification System), which makes a digital recognition on a large scale and makes possible civil and criminal identification and the control of frontiers and prisons, besides the issue of documents like identity cards, driver's licenses, passports, voter ID cards and others. Even in gigantic databases, with hundreds of millions of fingerprints, recognition can be done in a few seconds. As any Brazilian state has millions of fingerprints, the company has developed Speed Cluster, a technology in which dozens of computers work in parallel to process the database, speeding up the response to the search carried out. Last year, the company was given the Finep Technological Innovation Award in the small business category, given by the Financier of Studies and Projects.

At the moment, Griaule is working on another biometry project, for digital detection and recognition of the human face. "By 2008, we want to make a multibiometry product, that includes signature and voice recognition", says Daher. A study carried out by the International Biometric Group (IBG), a consultancy company from the sector in the United States, indicates that the global sales of biometry equipment are going to leap from US\$ 2.1 billion in 2006 to US\$ 5.7 billion in 2010. Fingerprint recognition, the most widespread and the cheapest of the biometric systems, should account for 44% of the sector's global market this year, while the authentication of the face appears in second place, with 19%.

The market for biometric systems is growing continuously, but it has still not reached a peak, nor does it have one leading company, which places Griaule in a privileged situation. "We have been in the market for some time, we have a well-developed algorithm, customers, a well-defined distribution chain, and an organized research and development structure", Daher says. ■

THE PROJECT

Improvement of the quality of recognition and availability (Speed Cluster) of Griaule Afis

MODALITY

Small Business Innovation Research Program (Pipe)

COORDINATOR

IRON CALIL DAHER - Griaule

INVESTMENT

R\$ 301.800,00 (FAPESP)