



Case Study | Valid | Biometric Attendance

Fast and Economical: Lightweight Facial Recognition Automates Roll Calls at Schools

80% time saved on roll
call per each class

1 million students
identified per day



VALID, a Brazilian Trust Solutions Orchestrator, joined a tender to solve a demand of CELEPAR, a state-owned IT company in Brazil, to find a comprehensive solution that would enable the enrollment and attendance tracking of primary public-school students in Paraná state, Brazil, utilizing facial recognition technology.

Challenge

- Create a facial-recognition-based attendance system robust enough to **process high volumes of operations in a short period of time**
- New roll call system should be **fast and accurate**

At the start of a school day in Brazil, the attendance of every student in each class has to be manually registered. The roll call system was performed every lesson, taking up a considerable amount of time throughout the day.

Instead of a roll call, the solution should record each student's attendance across the state at the beginning of each class, resulting in a high volume of data comprising 430,000 students. Additionally, during peak times, attendance

for more than 24,000 classes must be registered swiftly. Based on project requirements, more than 17,000 servers are needed with the traditional approach to deployment and implementation of such a solution estimated to cost over half a million US dollars.

After a competitive selection process, VALID won the tender and partnered with Innovatrics to provide the solution with facial recognition technology for the project and save on infrastructure costs significantly.

Solution

- **Quick and accurate attendance** records with Innovatrics Lightweight Facial Identification Service
- **Elastic cloud** allows the processing of vast amounts of data
- Designed to support **clustering and automatic scalability**

Based on the solution orchestrated by VALID, Innovatrics Lightweight Facial Identification Service was implemented as it requires no special cameras or hardware to record class attendance accurately. A teacher simply opens the mobile app developed by the Secretary of Education and takes 1–4 pictures of the class using their own cell phone before a lesson starts. The photos are then sent to Google Cloud Platform, wherein the facial recognition system detects and extracts each

student's face from the photo and performs face matching against a particular watchlist.

The app developed specially for the solution then displays the list of names of each identified student and automatically marks them as present or absent. If there are unchecked names, the teacher can take a photo of the unidentified student to verify or check their identity manually. Moreover, parents have their own version of the app, which allows them to check if their child is indeed at school.

Results

- Fast attendance check with zero maintenance costs
- 80% time saved on roll call per each class
- Accurate face identification even on small, low-quality face pictures

By deploying Innovatrics Lightweight Facial Identification Service, the VALID solution for Paraná state has significantly spent less on infrastructure with zero maintenance costs. Additionally, facial recognition-based attendance and roll call allow instant identification of students, reducing the workload of teachers. With data being updated in real-time, a student's family can be granted benefits if they attend a minimum number of classes. The Secretary of

Education can also fast-track what transpires at schools and adapt strategies and routines accordingly.

In the pilot phase of the project, more than 200,000 students have been processed daily. The average face detection time on a single picture takes 1.000ms and the average face extraction from a detected face takes 100ms. In full production, over 2,100 schools and close to 1 million students will be identified per day.

Before

Classroom roll call took at least 5 minutes

No physical proof of a student while at school

17,000 servers worth more than \$500,000 with a traditional approach

After

5x faster via the app

Parents can instantly check if their child is present

Zero maintenance costs

Security as a Priority

With the seamless integration of Innovatrics Lightweight Facial Identification Service embedded in the VALID solution, a student's face can be precisely matched to even low-resolution pictures, ensuring that the student is indeed present at school.

Technical Support Across Borders

Even without a dedicated Delivery team in Brazil, Innovatrics made sure VALID received the needed technical support. The Brazilian and Slovakian teams had daily interactions to overcome language barriers during the most critical production ramp-up periods.

Easy Scalability Minus the High Cost

Innovatrics Lightweight Facial Identification Service is natively scalable on a cloud-based infrastructure. Embedded in the VALID solution, no investment was required for infrastructure as any mobile phone can be used, eliminating any maintenance costs. The new process is to be implemented in more than 2,100 schools, benefiting close to 1 million students.

“ The solution we created for CELEPAR is quite innovative in Brazil and it was only possible with the partnership of Innovatrics.



Ilson Bressan,
Executive Director
at VALID

About Us

We are an independent EU-based provider of multimodal biometric solutions. Our algorithms consistently rank among the fastest and most accurate in fingerprint and face recognition. Since 2004, we have partnered with all types of organizations to build trusted and flexible biometric identification solutions. Our products are being used in more than 80 countries, benefiting more than a billion people worldwide.

Contact

Sales@innovatrics.com
www.innovatrics.com

Brasil

+55 11 4210-5185

USA

+1 404 984-2024

Slovakia (HQ)

+421 2 2071 4056

Singapore

+65 3158 7379