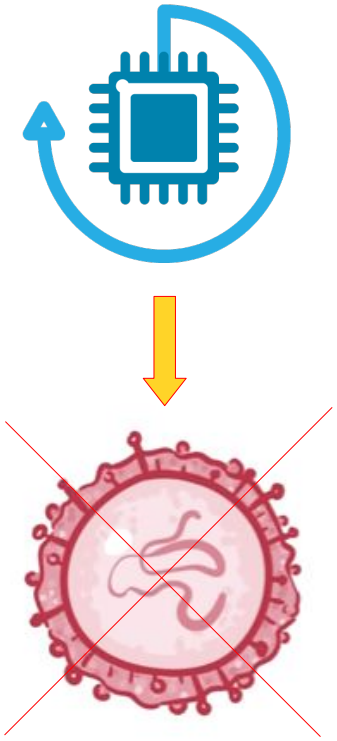
Fighting COVID-19 using Artificial Intelligence



Recommendations for policy makers to reduce the spread of SARS-CoV-2 (COVID-19) in public spaces and Institutions.

Recommendations by WHO & other prominent research Institutions around the world for steps to be taken in institutions & public facilities.

How to limit the spread of SARS-CoV-2 in public spaces and Institutions after lockdown?

- Maintain hygiene in every human accessible surfaces of the institution or public space by following appropriate protocols, processes & using PPEs to clean & disinfect it.
- **Deploy help desks / check point on all entry and exit for educating the people**.
- The check point should ensure strict social distancing among the people, min 1Meter.
- **The help desk should promote minimal physical contact among people.**
- Enforce everyone to wear a good fit mask & if required safety goggles / visors & gloves.
- **Promote regular & thorough hand-washing, especially for people who move around.**
- Promote good respiratory hygiene & advertise how to maintain it effectively.
- **Avoid large gathering & meetings as 80% of COVID-19 carriers are asymptomatic.**
- The check points should ensure that the foot fall to the facility is recorded.

How to limit the spread of SARS-CoV-2 in public spaces and Institutions after lockdown? ..

- Anyone with mild cough or low-grade fever (37.3°C or more) needs to be isolated, credentials verified, and their family, medical and travel history is to be collected.
- **The checkpoint should advice the crowd about the communications reg COVID-19.**
- The check point should state clearly that details about the crowd will be shared with local public health authorities if any of them becomes ill with an infectious disease.
- **Maintain stock of PPEs including gowns, masks, gloves, visors, sanitizers & disinfectants.**
- Promote the use of fully covered, properly cleaned & dry clothes that suits the season.
- **Separate labelled waste bins with foot operated lever for disposing used PPEs & tissues.**
- Encourage people to cover their face with a handkerchief or the bend of their elbow or a tissue if they cough or sneeze. Supply tissues & labelled closed bins for disposal.
- **Open windows & doors whenever possible to ensure good ventilation.**

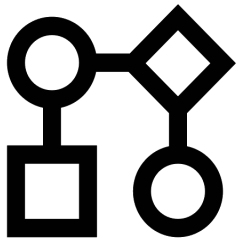
How to limit the spread of SARS-CoV-2 in public spaces and Institutions after lockdown? ..

- Develop a response plan in case if someone ill with or with out symptoms of COVID-19 (dry cough, fever, malaise). This plan should include at least:
- **>> Identify a room or area with attached toilet where someone who is feeling unwell or has symptoms can be safely isolated, perform preliminary diagnosis.**
- >> Have a plan for how they can be safely transferred from there to a health facility.
- **>> Know what to do if a person, staff member, or service provider tests positive for COVID-19 during the transfer.**
- >> Agree the plan in advance with your partner health care provider or health dept.
- **>> Ensure PPEs, dispensers of alcohol-based hand rub are available in a clean room.**
- >> A digital log book to capture the photograph, name, mobile telephone number, email, permanent address, where they are staying, places of visit (past 10 days).

How modern technology can help ?

How techology can be a crucial tool in reducing the spread of SARS-CoV-2 ?

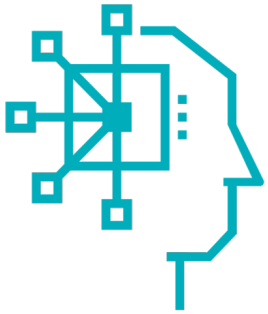
- Deploy crowd control mechanism outside the facility to stream line people movement.
- **Use high resolution CCTV & thermal cameras to monitor every entry & exit of the facility.**
- Deploy advanced video analysis & facial recognition algorithms to monitor the crowd.
- **Use self service digital visitor management software to document each & every visitor.**
- Use people counting mechanism to limit the people using the facility.
- **Use digital signage and public address systems to promote personal hygiene.**
- Comprehensive report and contact tracing as required by the govt agencies.




the
avalokana
project

What is this avalokana project ?

- @ GENILOK we firmly believe that "Failure to prepare is preparing to fail"
- **This project aims to reduce the overload on the front line officials who are tasked with identifying & isolating any potential COVID-19 patients or carriers from a crowd.**
- This project employs Artificial Intelligence (AI) based surveillance system, advanced S/W, H/W & support systems to monitor & classify up to 24 people per second.
- **With improvements in AI, we can now detect people, identify them, diagnose them and classify them in real time.**
- In short, the laborious work of stopping every person in a crowd and monitoring their body temperature, capturing their details & then classifying them can be avoided.
- **This project is a non-contact, multi-objective, fast, & low risk way to stop COVID-19**



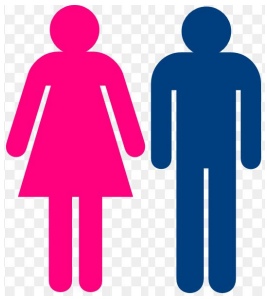
Salient features of the avalokana project

- A mechanism to stream line the inbound crowd towards a building or a facility.
- **A thermal imaging camera & a high resolution colour camera for observing the crowd.**
- A calibrated heat source (35.0°C) known as black body is used as a reference point.
- **Video recorder with Artificial Intelligence is used for Intelligent Video Surveillance (IVS).**
- The captured data is stored in a hard disk drive of the video recorder.
- **With these parts, the avalokana project can identify individual people from a crowd.**
- It can capture the face and compare that face with the onboard data base.
- **Collect metadata from the captured images & generate intelligence report from it.**

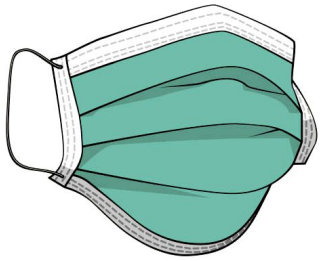
Advanced features of the avalokana project

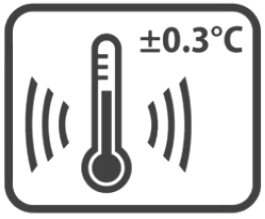
- From metadata, the avalokana project can identify the following parameters.

- Real Time Face Recognition
- **Up to 24 face pictures /sec processing**
- Up to 100,000 face images in the database
- **Facial attributes analysis**
- Classify as known / stranger
- **Gender Identification**
- Approximate Age Identification



- **Read the expression of the subject**
- Having moustache or not
- **Wearing glasses or not**
- Wearing mask or not
- **Configurable alert system**





Technology behind the avalokana project

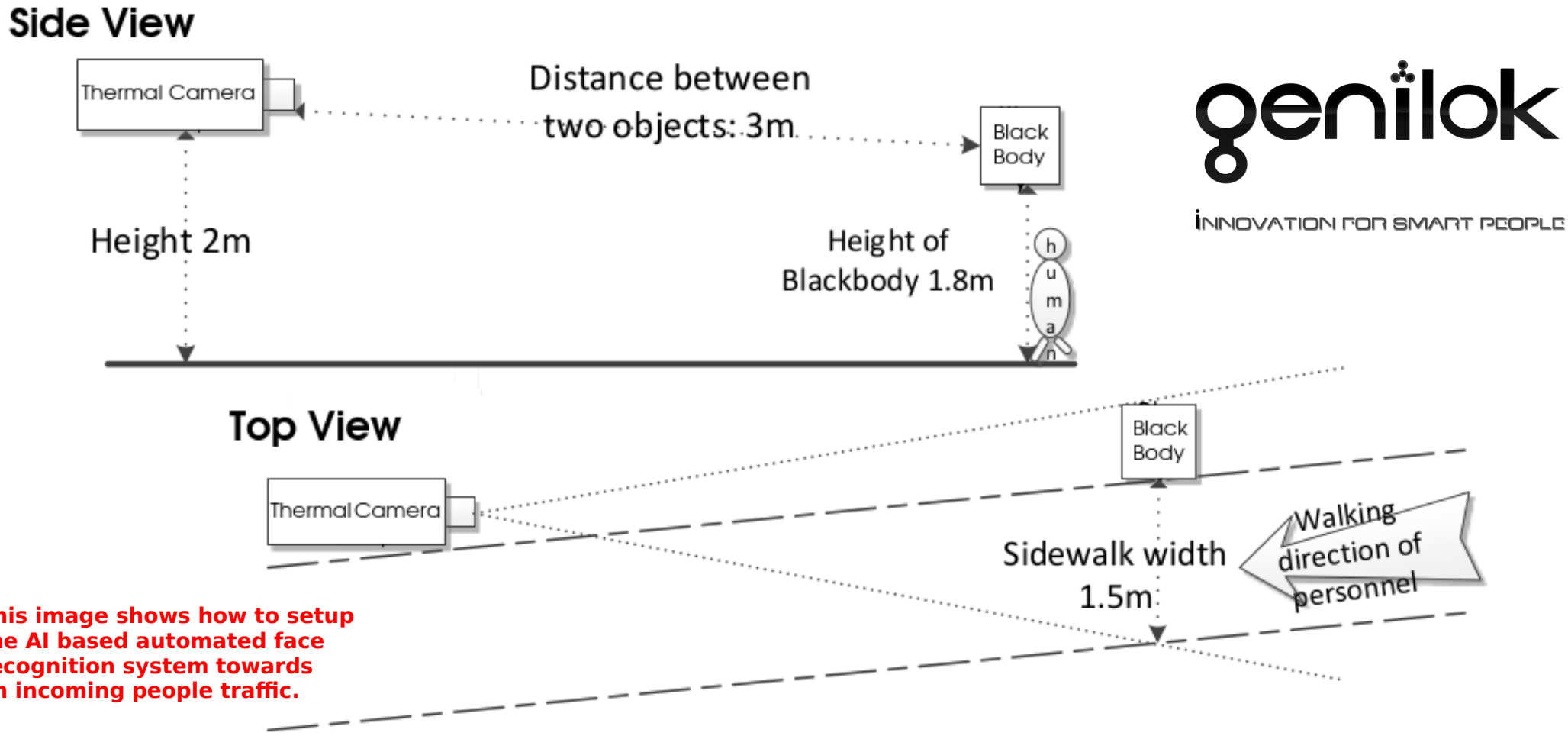
Behind the scenes of the avalokana project

- The equipment is setup at one end of the entrance of the facility.
- Special care is taken to avoid direct sunlight, heat sources & dust in the area.

This image shows how the artificial intelligence based automated temperature measurement system is setup at the reception of a building.

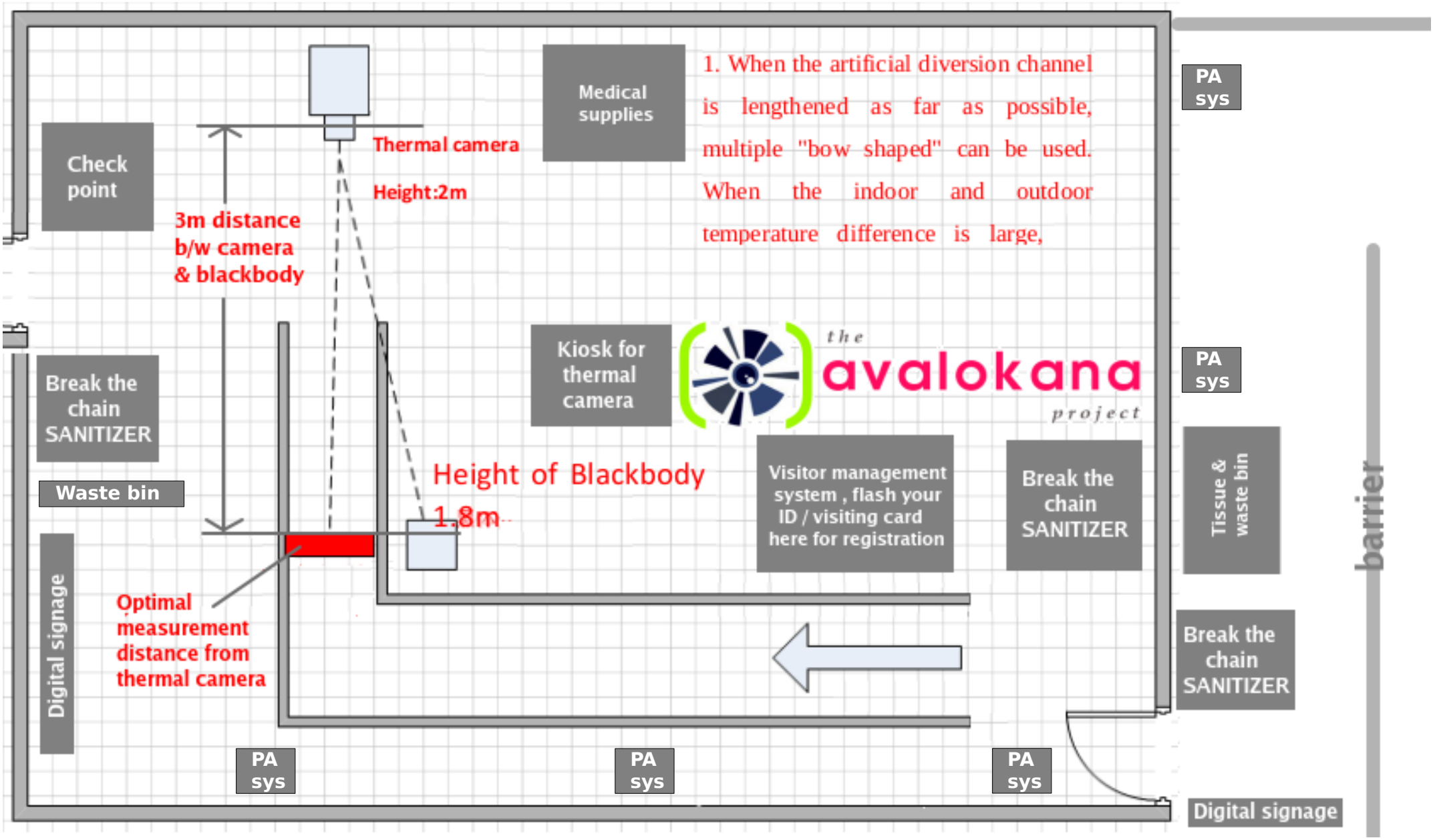
Behind the scenes of the avalokana project ..

- 20~25°C is the best ambient temperature for the equipments to work properly.
- The crowd coming from outside should get time to adjust to ambient temperature.



This image shows how to setup the AI based automated face recognition system towards an incoming people traffic.

Basic layout of the various modules of the avalokana project

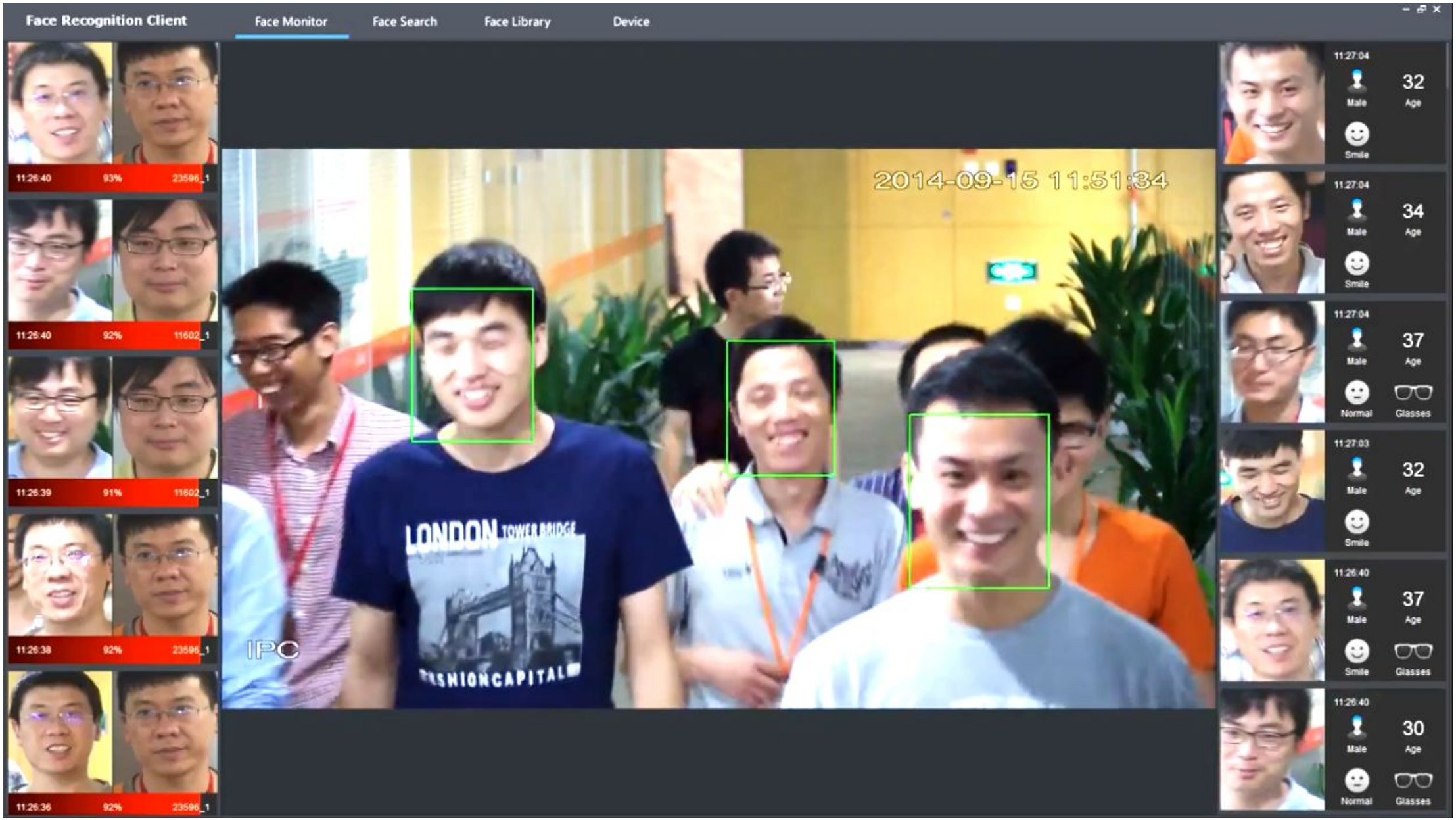


List of facilities required to build the avalokana project

- A space in the reception / lounge of the facility, this space should be large enough to streamline the average foot fall to this facility.
- **Multiple barriers & walking guides to ensure uncluttered movement of the people.**
- PA system & digital signage systems to educate the people about DOs & DON'Ts.
- **Hand sanitizers, tissue papers, & waste bins which are labelled as infectious.**
- Digital visitor management software with photo capture & ID capture functionality.
- **Manned check point desks that identify & isolate ill people from the crowd.**
- An isolation room with chairs, waste bins, hand sanitizers, tissue paper & attached toilet.
- **Automated face recognition system or hand held non contact temperature reader.**
- Good stock of PPEs including N95 masks, gowns, visors, alcohol based rubs & gloves.
- **People counting instruments to calculate & limit the foot fall as per the govt policy.**

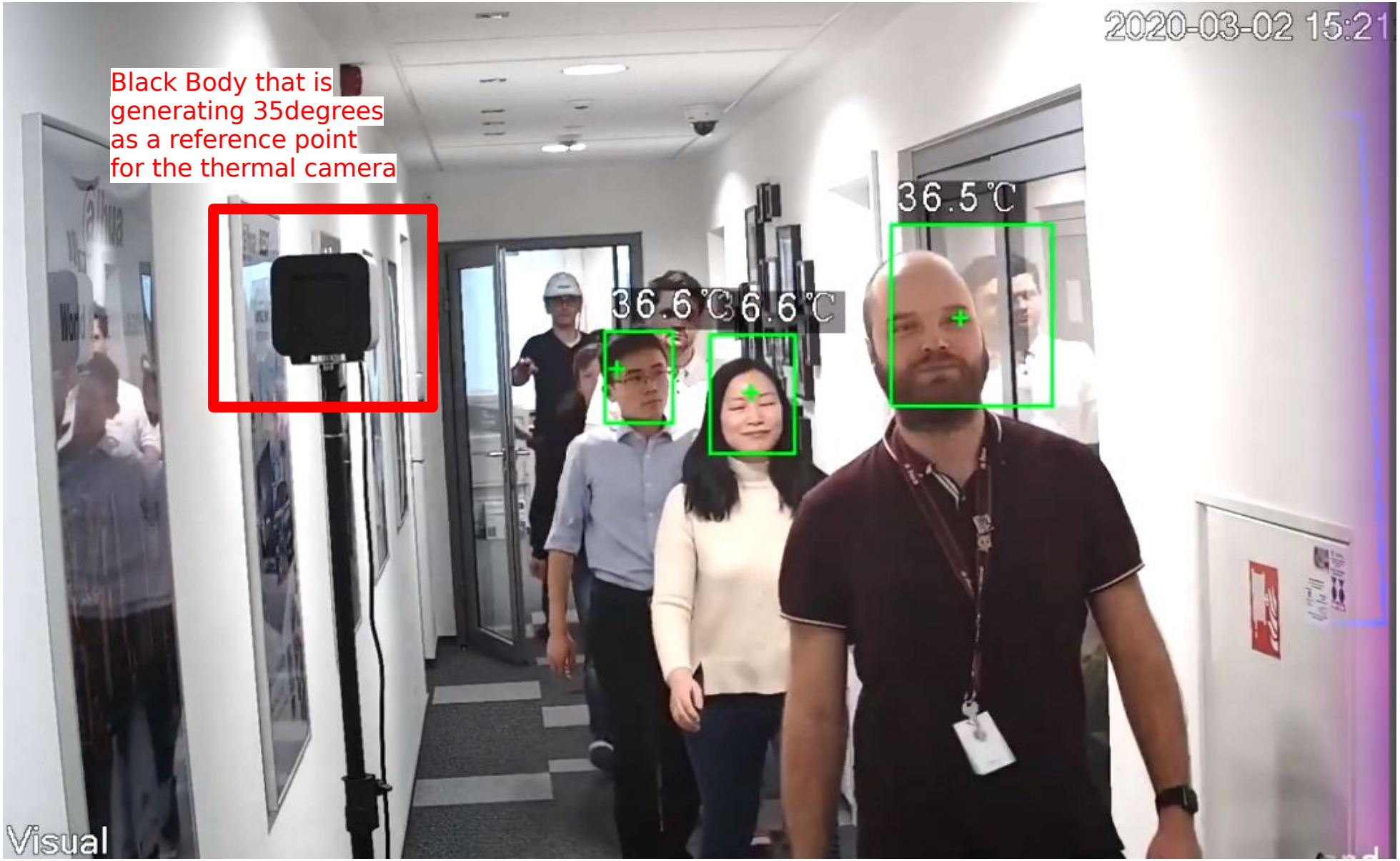
Runtime screenshots of the Artificial Intelligence capabilities of the avalokana project

Runtime snapshots of the solution, in 2014, we could categorize and identify people



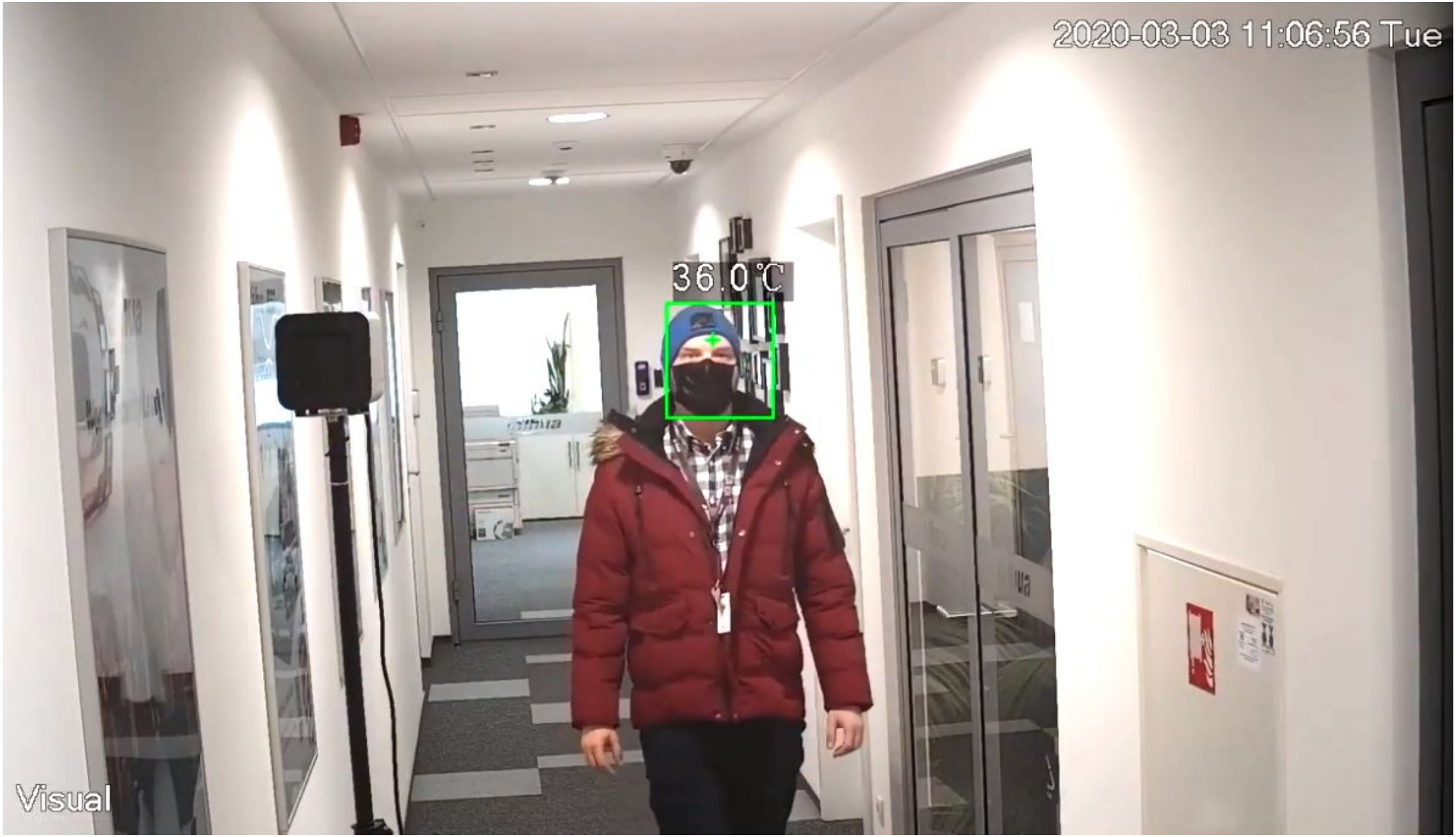
By 2018, we could precisely find faces in a crowd & measure their body temperature

By 2019, we could measure the body temperature of a person with a tolerance of 0.3°C



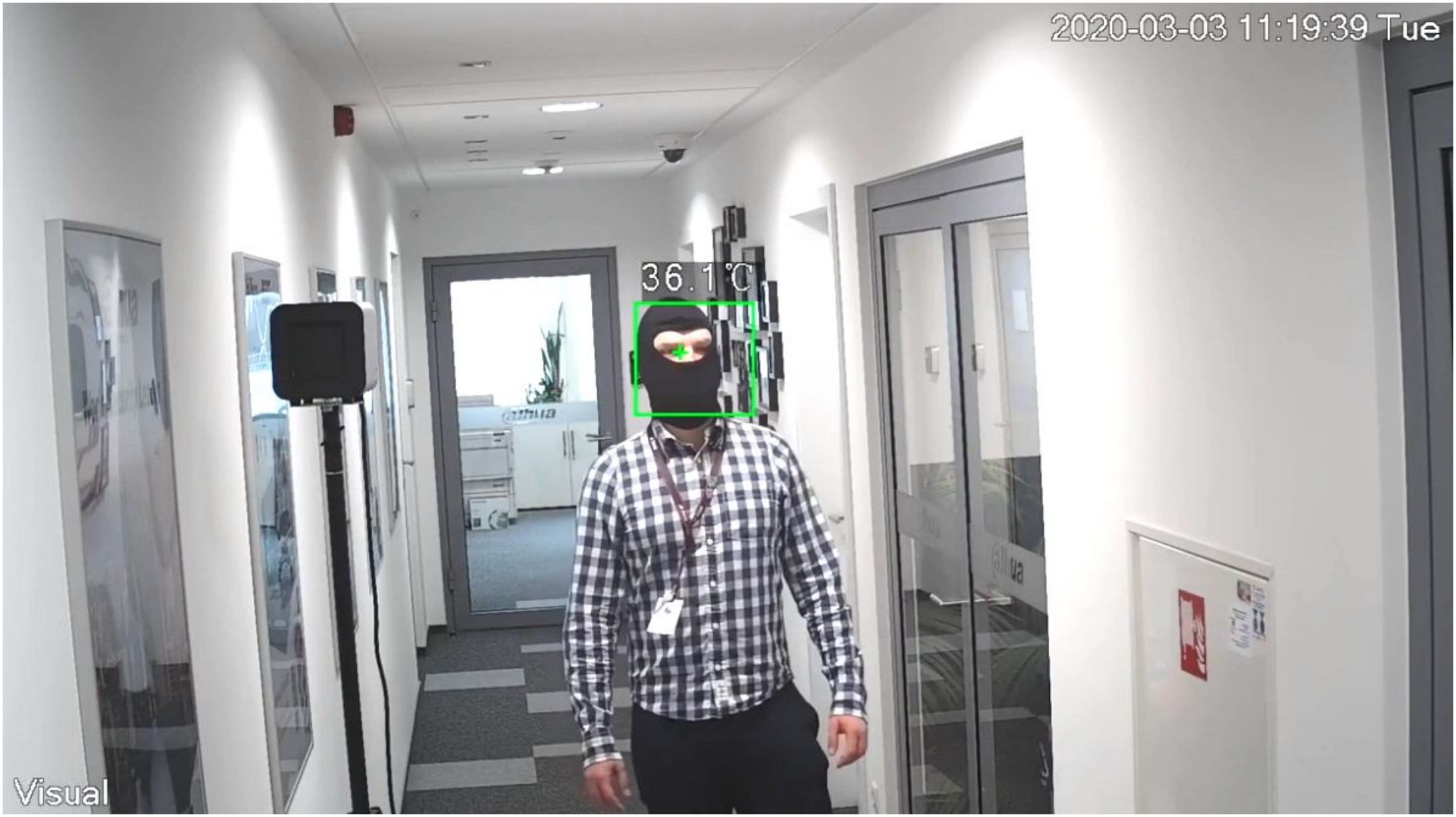
By 2019, we could measure the body temperature of a person with a tolerance of 0.3°C ..

The solution is able to measure the body temperature even when masks are worn



The solution is able to measure the body temperature even when masks are worn ..

The solution is able to measure the body temperature even if covered masks are worn ..



The solution is able to measure the body temperature even if covered masks are worn ..

The solution is able to measure the body temperature even if a helmet is worn

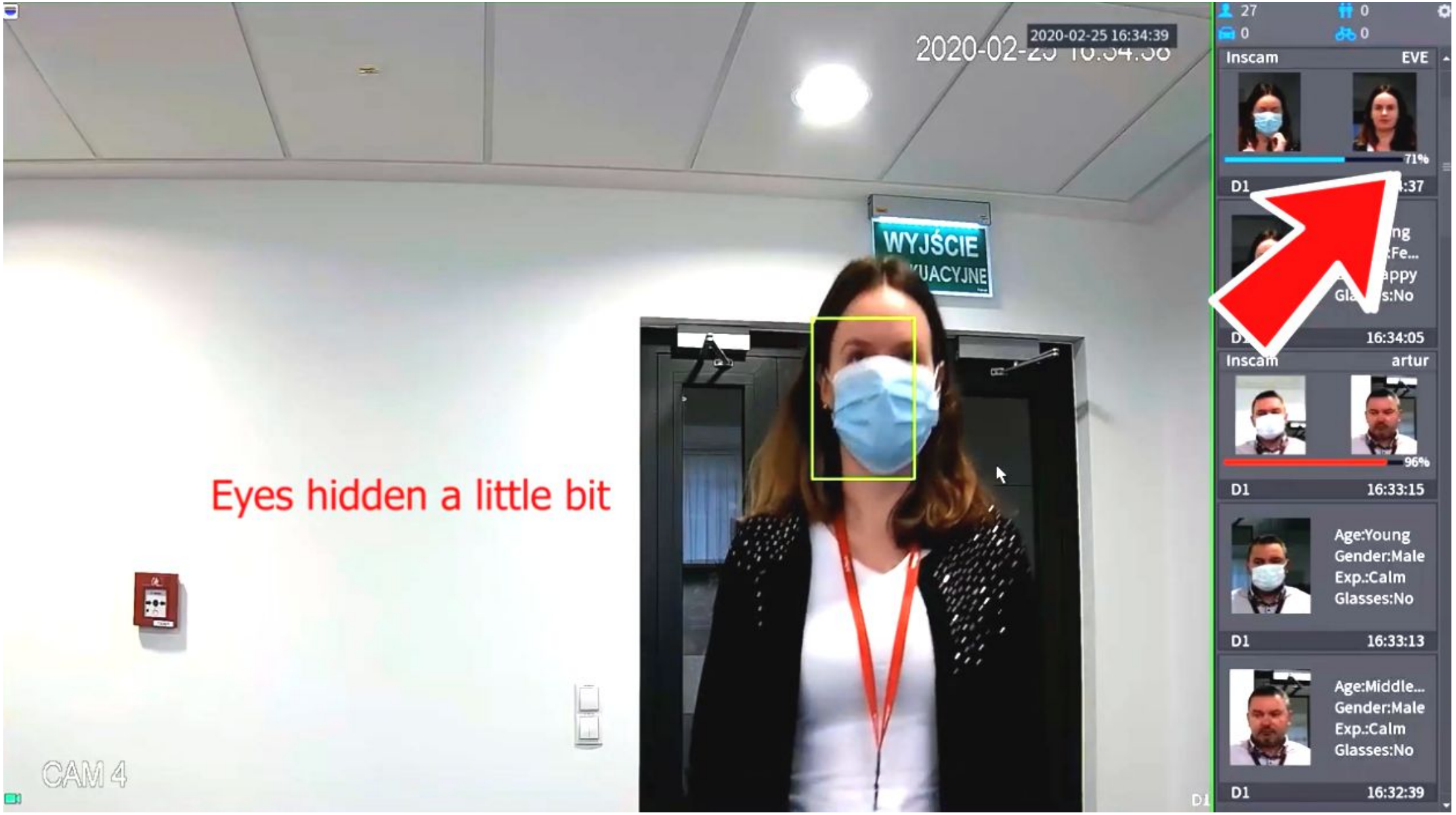
The solution is able to measure the body temperature even if a helmet is worn ..

The solution is able to measure the body temperature even when a hot coffee mug is there

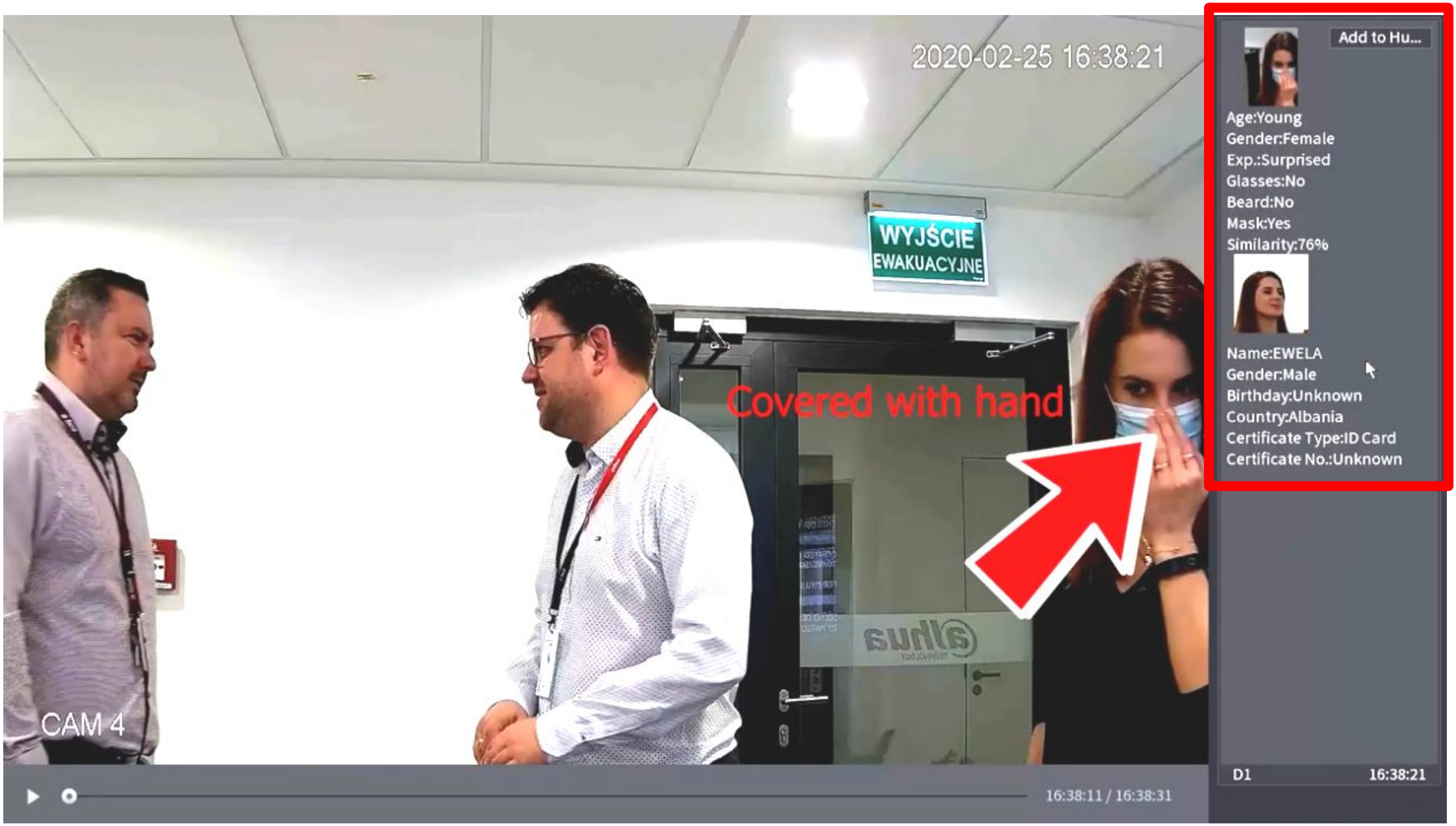
Identify the employee while wearing a mask, and update the attendance record

Identify the employee while wearing a mask, and update the attendance record

Identify the employee while wearing a mask, and update the attendance record



Identify the employee while wearing a mask, and update the attendance record



Institutions using AI based non contact human temperature mapping technology.

- Kidwai Memorial Institute of Oncology, Bengaluru, Karnataka, India
- **Embassy of the People Republic of China (Poland)**
- Uzbekistan airport (Uzbekistan)
- **Ministry of Education (Singapore)**
- Sentosa Casino (Singapore)
- **Lotus Supermarket (Thailand)**
- Beirut Rafic Hariri International Airport (Lebanon)

References

- https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf
- **https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public**
- https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks
- **https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters**
- Safe Systems for Working by NHS England.
- **https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html**

the avalokana project

"Failure to prepare is preparing to fail"

Kindly let us know if you need more information.

Genilok Computer Solutions Private Limited,

BNRA-23, Anaswara Lane, N.C.C Road,

Peroorkada P.O, Thiruvananthapuram,

Kerala, India. PIN 695005.

Cell Phone : +91-828-1030-476

Desk Phone : +91-471-2437-476

Email : admin@genilok.com

Website : www.genilok.com

Thank you for your valuable time; stay safe & stay healthy.