SAFEST

An effective, reliable, and easily deployable thermal screening solution to discern and identify elevated skin temperature.

All physical things either radiate or reflect heat, including human skin. Elevated Skin Temperature (EST) is an indicator of potential health issues. Where airborne pathogens are prevalent, social distancing protocols make contact or close proximity solutions high risk. Thermal cameras operating from a safe distance are well suited to these scenarios and can be easily deployed.

But there are challenges associated with EST screening where thermal cameras are used as thermometers, and these can undermine reliability and have potentially serious consequences. The greatest risk is that most thermal cameras read temperatures with insufficient accuracy, with measurements influenced by environmental factors, measurement procedures, and inherent sensor tolerances that can cause reading deviations up to 5°C / 9°F. Non-medical grade thermal cameras should not be used as thermometers.

SAFest is a mobile application that takes a different approach, developed specifically for use with the Cat S60/61 device range with integrated FLIR thermal cameras.

Rather than taking absolute temperature readings, it relies on the camera's thermal sensitivity to highlight anomalies and temperature differences of as little as 0.1°C, combined with thermal pattern recognition and analysis to identify unusually elevated skin temperatures. It's a solution ideally suited to first-line-of-defence triage screening, with individuals showing EST able to be isolated and, where appropriate, additional checks carried out.

The SAFest app uses advanced algorithms to identify the human head which is then automatically scanned and analysed. Every visible thermal pixel is measured, typically aggregating 100 000 simultaneous temperature measurements across the entire face.

Targeting ensures that only the head is screened, so hot beverages or other heat sources are excluded. Within 3-5 seconds the app analyses the subject and reports temperature status, whether normal or elevated, allowing the operator to grant access or follow appropriate protocols by declining access and refer for clinical evaluation.

Thermal sensitivity and relative temperature analysis

HOW?

The Cat S60/61 range has a thermal sensitivity capable of identifying temperature difference of just 0.1°C. This makes the camera ideal for identifying anomalies in skin temperatures elevated above a calibrated normal. On setup the app is calibrated to normal skin temperature in the testing environment and then runs continuous calibration throughout the screening session to adapt to environmental changes.

Thermal sensitivity and relative temperature analysis

WHY?

Screening operators are not medically trained and cannot, and should not, be required to interpret skin temperature data in respect of any medical diagnosis.

While core temperature remains consistent, skin temperatures will change depending on factors, including ambient temperature at different times of the day, giving varied readings and relying on an element of interpretation by operators.

The SAFest algorithm tracks these changes and maintains a dynamic "normal", triggering EST alarms based on accurate relative measurement – no guesswork or interpretation is required of the operator.

ROBUST EFFICACY TESTING

The Cat S61 smartphone thermal images have received a UKAS accredited calibration, fully traceable to national standards, with quantified measurement uncertainties and in accordance with ISO 17025 from the National Physical Laboratory (NPL), the UK's national metrology institute. NPL's temperature group maintains and disseminates the international temperature scale (ITS-90) for the UK and has world leading facilities and experience.

Cat phones are Mil Spec 810G and IP68 rated and can be sanitised with bleach or alcohol – or fully submerged and washed in warm soap and water.

REPORTING AND EARLY WARNING

No other thermal imaging device can provide the benefits of full smartphone integration: 4G connectivity and communication, mobility, ease of use, speed of deployment, real time data capture and sharing - including image metadata (time, date, and location).

Cloud based subscription offerings are available in addition to the SAFest application which provide levels of reporting from basic anonymous statistical and trend analysis based on screening ratios, to full HR compliant reporting with biometric facial recognition (where permitted by, and compliant with, local regulations). Real-time alerts sent by push notification to In4Mer Mobile app to enable management to respond to developing trends of EST days before any medical diagnosis is determined.

Normal human faces typically present with an array of temperatures based on blood flow to different areas – noses and ears are colder than the tear ducts or temple, these show as different colours in a thermal image. In febrile subjects with elevated skin temperature the heat distribution typically changes to a uniform elevated temperature. The SAFest app analyses the thermal pattern in each subject and alarms for EST where uniform patterns are identified.
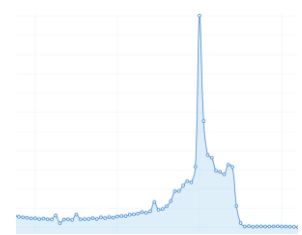
Thermal sensitivity and relative temperature analysis

HOW?
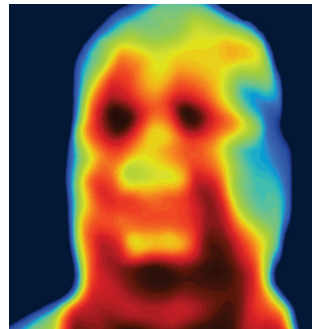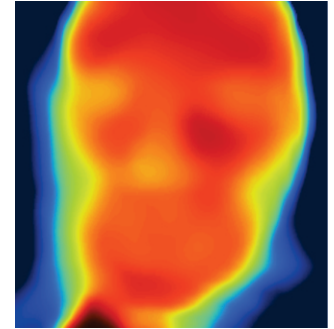
Normal pattern   Febrile pattern

Thermal sensitivity and relative temperature analysis

WHY?

Thermal pattern analysis adds a unique and important additional layer to the thermal screening process. This improves the reliability of screening, as well as assisting in identifying individuals who may present with elevated temperature due to high intensity exercise who should rather be re-screened after cooling down than necessarily denied access.
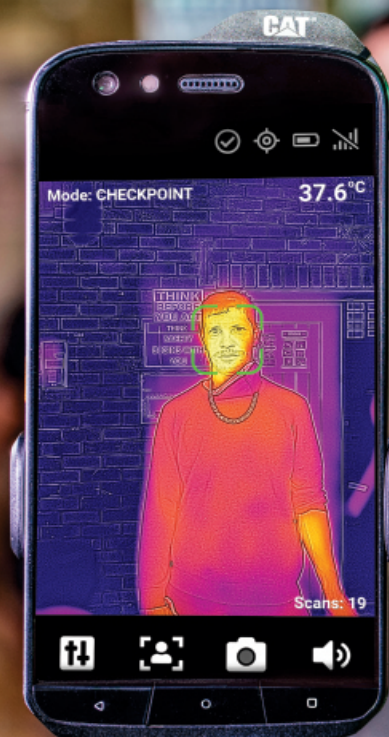
SAFEST
Monitoring Console

A cloud data storage facility and operational management console to view and monitor all thermal screening data

FEATURES

- Facial recognition system
- Data transmission to cloud
- Identify patterns & hot spots immediately
- Automated alarms on Elevated Skin Temperature events
- Map view of all devices/incidents

- Manage user access and visibility
- Keep track of incidents
- Create and manage groups
- Customisable reporting
- Customer assistance

Elevated Skin Temperature Data
All scanned data is transmitted to our cloud hosted backend (In4Mer) for storage and monitoring purposes. Data easily accessible via web interface for remote monitoring purposes

Information uploaded to secure cloud
All scanned data uploaded to the cloud in real- time for data transmission to a Control Room. Existing thermography data can also be uploaded to the cloud

Real-time Command and Control platform
Finger on the pulse , all scanned data is fed to our monitoring console in real-time for immediate response and monitoring. See Elevated Skin Temperature alarms appear in real-time and manage these timeously

Automated Reporting
All data is transmitted to the cloud for automated reporting purposes. Run weekly reporting on all scanned individuals including amount of people scanned and Elevated Skin Temperature alarms received per scanner. Finger on the pulse continuously.

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HOLDINGS

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SAFEST

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