



# Connect Tech

## Kogniz Health Response Platform



CASE STUDY

## Real-Time Health Analysis of Public Places

### OVERVIEW

Kogniz designed a Health Response Platform that utilizes AI and machine learning to continuously and accurately measure an individual's body temperature even in high-flow areas. By inferencing multiple data sources provided by a meshed network of Edge devices, the Platform provides a fast and predictable situational analysis of any environment. Proactive alerts flagging individuals who pose a potential threat to the relative safety of the area improves the public's safety against community virus spread.



# Connect Tech

Advanced AI technology combines accurate body temperature, mask wearing, social distancing, and occupancy data locations in real-time.



**With the world in crisis, advanced thermal imaging technology combined with artificial intelligence helps organizations and communities reopen with safer, smarter spaces.**

### Crisis Response

When the COVID-19 pandemic closed many private and public places, the ability to reopen was contingent on the ability to assure the safety of occupants. The five main contributors to ensure safer environments are for people to wear masks, wash hands, disinfect surfaces, distance themselves from others, and to stay home if they're feeling unwell. Labor-intensive methods to track and enforce these rules aren't practical in real-world environments.



When designing a platform capable of making accurate risk assessments of any location in real-time, multiple video streams processing in parallel is required. Due to the vast amount of data generated by the video streams, latency and transmission challenges required all Kogniz Temperature Cam devices to be capable of processing video streams and running neural networks locally.

The ability to accurately assess the body temperature of every individual in a space is critical for ongoing operations. The consequences of getting inaccurate information can be dire. Kogniz channels the capability of AI and machine learning and applies them to putting public safety first.

- Daniel Putterman, Co-CEO, Kogniz

### Powered by NVIDIA Jetson

Kogniz selected the NVIDIA® Jetson Xavier™ NX module to power each Temperature Cam. Arguably the best platform available in the market for video applications, the Jetson Xavier NX allows for 21 TOPs of performance with 384-core Volta GPU with 48 Tensor cores. This enabled Kogniz to process the required video streams and run all software locally on each device.

### Advanced Sensor Technology

Each Kogniz Temperature Cam uses four distinct vision streams to process all safety information simultaneously, giving an accurate assessment of the areas' inhabitants while it's happening:

#### Stereoscopic 3D

To accurately measure spaces between individuals

#### IR Projector and Receiver

To recognize and identify facial mapping

#### Long-wave IR Microbolometer

Contactless accurate temperature detection

#### RGB Sensor

For detecting whether or not a mask is present on faces



## Behind the Lens

Unlike alternative technologies, Kogniz finds the person in the building rather than the person needing to find the camera. The Temperature Cam uses AI computer vision for object detection in order to accurately identify distinct people and locate their faces. Given the variability of every environment, the platform is required to not only identify and assess all people within a given



area, but to also track them using facial recognition. Otherwise, the unpredictability of direction, path, and destination could mean that the system would identify multiple threats, rather than the same one in different areas. A combination of the data delivered through the IR projector and receiver and the RGB sensor allows the Kogniz platform to identify and track individuals in real time as they move throughout the space. With parallel processing of all video streams, the mask detection and body temperature identification information will follow the individual.

Determining social distancing using standard video cameras is difficult as the homographic estimations can provide inaccurate distance results. Kogniz instead uses a stereoscopic 3D image to accurately detect the number of people in any area and calculate the true space between individuals.

The main differentiator between the Kogniz platform and other available technologies is the accuracy of body temperature readings. The surface temperature of skin is not representative of a person's internal body temperature. Changes to atmospheric conditions- such as bright sun, snow, rain, etc.- will be reflected on a person's skin temperature for up to ten minutes after they enter a building. In order to facilitate the best possible temperature reading, Kogniz uses AI detection to take temperature readings from a pinpointed space on a person's ocular area rather than relying on general skin temperature. The system generates a running temperature-reading histogram of everyone in the room to provide a baseline expected temperature. Through the use of machine learning models, all processed information is analyzed in real-time in order to determine a representative sample of expected temperature given all current parameters. From there, temperature adjustments for elevated body temperature can be applied and anyone presenting above the adjusted baseline will be flagged.



## Rapid Market Deployment

Due to the market's requirement for fast solutions, the Kogniz Temperature Cam needed to be designed and deployed rapidly. Kogniz partnered with Connect Tech in order to utilize Connect Tech's advanced AI camera embedded platform specifically designed for the NVIDIA® Jetson Xavier™ NX module- uniquely suited for the required video inputs. Beyond selecting Connect Tech's embedded hardware, Kogniz chose Connect Tech to provide full system manufacturing and integration services. Connect Tech's ability to design and build systems rapidly and at volume allowed Kogniz to expedite deployment during the global pandemic, and easily scale to meet market demand.

Connect Tech's rapid turn-around of high-quality systems built in North America has allowed the Kogniz platform to permit essential manufacturing services to remain open throughout mandatory closures. Notably, the meat packaging and processing industry- which is vital for uninterrupted food supply- was able to continue operations with the health and safety of personnel assured through continuous monitoring. The Kogniz Health Response Platform continues being deployed throughout high-volume traffic areas such as museums, movie and television studios, retailers, corporate offices, and public gathering spaces where concern of community spread is greatest.

To learn more about how this user-friendly platform can be implemented for your organization, visit [www.kogniz.com](http://www.kogniz.com).

## ABOUT CONNECT TECH INC.

Connect Tech Inc. is NVIDIA's largest global embedded hardware partner offering a wide array of NVIDIA® Jetson™ solutions, as well as embedded solutions for a variety of industry standards including COM Express, SMARC, and more. With over 35 years of embedded computing experience, Connect Tech's range of proven technology includes complete embedded systems, carrier boards, thermal solutions, and more. With in-house design and manufacturing services, Connect Tech can provide fast turn-around of custom design services, taking you from development to deployment in record time.



Contact us: [sales@connecttech.com](mailto:sales@connecttech.com)

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