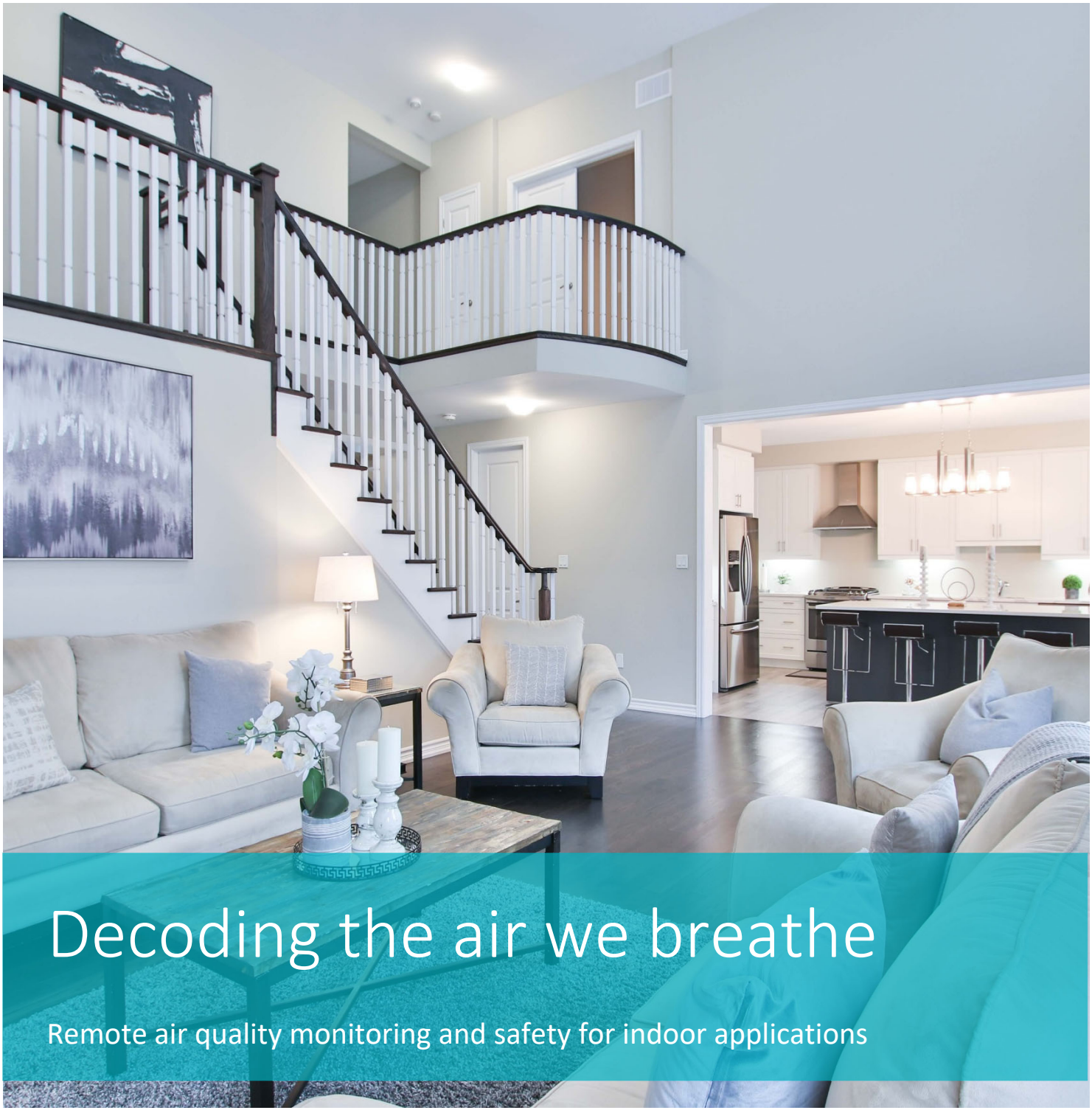


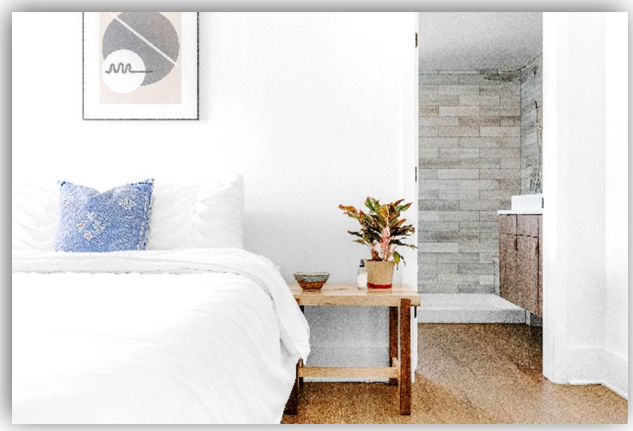
Decoding the air we breathe

Remote air quality monitoring and safety for indoor applications

STRATUSCENT

The Limitations of Remote Home-Monitoring

We are becoming increasingly connected – whether it is with each other or our living spaces. Having the pulse of our homes accessible through our smartphones gives us comfort and a sense of security. At the heart of this connectivity is an increasing number of Internet-of-Things (IoT) devices that connect to our Wi-Fi to provide us with remote eyes and ears. Smart home-security systems, for example, use IR sensors to detect intruders and send out alerts.



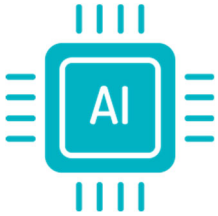
There is one more human sense that has yet to be integrated into our connected devices – the sense of *smell*. With over 140 million homeowners in US & Canada, remote monitoring of properties for unhealthy smells, flammable gases, unpleasant scents, and other malodors is becoming crucial for owners of primary, vacation, and rental properties. In these cases, harnessing the sense of *smell* can remotely provide a "scent picture" of the property. Detecting target scents or odors can indicate cleanliness issues, presence or use of illegal substances, and even ongoing activities in violation of the property rules (such as large parties). Much like a trained guard dog is needed to pick out target smells, the digitization of the ability to smell is imperative to achieve true connectedness with our homes.

Stratuscent's Scent-Digitization Technology

Stratuscent's breakthrough, portable, real-time, and low-cost electronic nose (eNose) leverages chemical receptors and artificial intelligence (AI) to digitize simple and complex everyday scents in real-time with great accuracy.

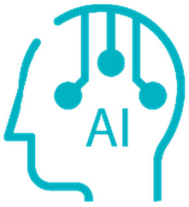
The chemical sensing market is filled with large and expensive gas chromatographs and mass spectrometers, or smaller MOX sensors that can only detect single chemicals. Until Stratuscent, there wasn't a low-cost, portable, reliable, and robust means of detecting multiple aromas-of-interest evolving in a complicated background environment – all of this with a single eNose.

Stratuscent's eNose is based on technology that was developed at NASA's Jet Propulsion Lab (JPL) and installed in the International Space Station. After obtaining exclusive worldwide licensing rights to 6 patents, Stratuscent has improved and optimized the end-to-end system to provide real-time environmental intelligence in home monitoring applications.



Proprietary Chemo-scent Receptors

At the core of Stratuscent's eNose is a 32-sensing-element chemiresistive array targeted towards the various functional groups of Volatile Organic Compounds (VoCs). As the scent flows over this array, the impedance of the sensing elements changes to create a *scentprint* unique to each scent. This *scentprint* is continuously captured and relayed to the cloud for interpretation. Thus, Stratuscent's proprietary chemo-scent receptors respond holistically to a scent.

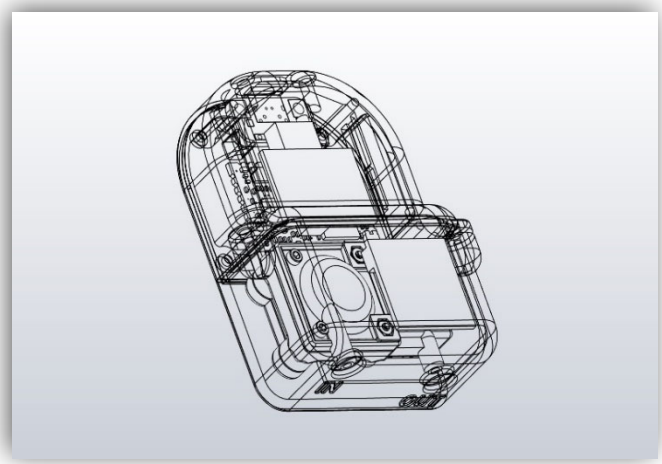


Bio-inspired Artificial Intelligence (AI)

Much like how our olfactory system works, the signal from the sensor (the "nose") is sent to the AI-enabled cloud (the "brain") for processing. Using proprietary machine learning techniques, the AI engine is able to not only detect the differences between different *scentprints* (e.g. lavender versus citrus) but also able to detect changes in the *scentprints* over time (e.g. during cooking) in various humidity and temperature conditions and in the presence of complex background scents.

In a true bio-mimicking fashion, just like how we don't switch our noses between smelling flowers and wines, Stratuscent's solution doesn't require different eNoses for different aromas. Leveraging the capabilities of the Microsoft Azure cloud, the same eNose unit can be remotely upgraded with improved capabilities or additional target aromas. Moreover, Stratuscent's eNoses continually learn from all the other eNoses.

Stratuscent's eNose Enables Remote Monitoring



Stratuscent's portable eNose module

Stratuscent's eNose module installed in a home

The air composition of any space has a unique and characteristic scent. Any event, change, or activity in this space (for example a person entering the living room) changes the air composition and thus the characteristic scent. For instance, when we enter a space, we add our scent (which might be a combination of deodorant and perspiration) to that space. Stratuscent's AI-enabled eNose can be trained to detect this change in the *scentprint* of the space even in the presence of background smells. Through training, it can predict even the number of people in the room [1].

Stratuscent's eNose can also be trained to detect malodors such as that of vomit, urine, feces, and cigarette smoke. Essentially, any malodor *scentprint* can be learned by the eNose and subsequently used in air quality monitoring. This guarantees to both the customer and the host that the home is clean.

The eNose can also be trained to detect undesirable or even illegal activities. For example, the eNose's ability to detect ethanol and high perspiration levels can be used to indicate an ongoing party. Similarly, detecting monoaromatics (like toluene and benzene) produced during tobacco and cannabis smoking can indicate ongoing undesirable activities.

With its breakthrough technology, Stratuscent's eNose solution can augment our current remote monitoring capabilities and provide comfort and security to the customer and the host.

[1] Fonollosa, Jordi & Rodriguez-Lujan, Irene & Shevade, Abhijit & Homer, M.L. & Ryan, Margaret & Huerta, Ramón. (2014). Human activity monitoring using gas sensor arrays. Sensors and Actuators B: Chemical. 199. 398-402. 10.1016/j.snb.2014.03.102.

Contact Stratuscent to learn more

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ABOUT

Stratuscent Inc.

Stratuscent's breakthrough portable, real-time, and low-cost electronic nose leverages chemical sensing and artificial intelligence (AI) to detect, digitize, and catalog simple and complex everyday scents thereby enhancing brand identification, quality control, yield, and safety. Incorporated in 2016 with offices in Montreal, Stratuscent Inc. was incubated at TandemLaunch, is a graduate of Creative Destruction Lab 2018 and a winner of the 2019 C.L.I.C. Challenge. **www.stratuscent.com**