

# Corti's Orb helps dispatchers identify critical conditions in real time



Case Study

## Company snapshot

Name: **Corti**

Vertical: **Healthcare**

HQ: **Copenhagen, Denmark**

Founded: **2016**

## Goal

In Western countries, sudden cardiac arrest accounts for around 15% of all deaths. From collapse until the start of resuscitation, the victim's chance of survival decreases by 10% per minute: dispatchers need help to recognize cardiac arrest quickly and efficiently.

## Solution

Corti's Orb is an edge device engineered to run complex machine learning (ML) models that can detect critical illnesses in real time. At the heart of the Orb is Nvidia's Jetson TX2 module, powered by the Arm Cortex-A57 processor, for high-performance processing combined with power efficiency.

## Benefits

- + Real-time decision support drives quicker and more accurate diagnosis.
- + Processing takes place securely on the device.
- + No need to connect to the cloud.

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## Saving Lives in Real Time

In the United States, more than 325,000 people suffer out-of-hospital cardiac arrest each year – and a large number of them will call 911 for assistance. Public safety dispatchers face a tough time in medical emergencies: not only must they identify the severity of the case on the line quickly and efficiently, they must do it largely alone. Even in the best-performing 911 services, dispatchers fail to identify around 25% of cases of out-of-hospital cardiac arrest, and so lose the opportunity to assist in cardiopulmonary resuscitation.

Enter the Corti Orb.

A user-friendly, plug-and-play device that's a fusion of Danish design and cutting-edge technology, the Orb is an appealing shell-like object that sits on the dispatcher's desk. But its engaging sculptural form belies its deadly serious function: the Orb provides real-time decision support that assists 911 operators in diagnosing and triaging patients more quickly and more accurately in emergency situations.



Essentially, the Orb connects to the telephone's audio stream to listen in on emergency calls and, running Corti's complex ML models, detects critical illnesses in real time.

Rather than being explicitly programmed with key signifiers, the ML models 'learn' by listening to a large swathe of calls to identify key factors, becoming more accurate as they do so. Non-verbal sounds can provide important clues, so the technology is capable of filtering background noise to hone in on critical information.

## Technology Backed by Research

Research conducted by Copenhagen-based Corti during development of the Orb included close analysis of more than 500,000 emergency calls. Using a subset of these calls – those pertaining to cardiac arrest – the team compared the performance of Corti's ML framework with trained medical dispatchers, for both time-to-recognition and actual recognition of cardiac arrest.

Trained dispatchers were able to recognize cardiac arrest in 73% of cases – but the ML model performed even better, correctly identifying cardiac arrest in an impressive 95% of cases, with time-to-recognition being significantly shorter.

“We've developed a technology, based on ML, that's able to provide vital assistance to medical professionals precisely when it's needed,” says Lars Maaløe, Chief Technology Officer.

“The Orb currently ‘understands’ five languages: English, French, Italian, Danish and Swedish. The ML models listen, in real time, to the call and when they detect something wrong – such as cardiac arrest – the Orb will alert the dispatcher on their screen and provide guidance on how to proceed.”

Crucially, the Orb takes just minutes to set up and runs real-time emergency support, connected to nothing but the dispatcher's telephone. When the Orb's services are no longer required, users simply unplug it.





“Ultimately, the Orb helps dispatchers to do their job better –and that means saving lives.”

## Fast, Efficient Assistance – On the Edge

The Orb runs on Nvidia’s Jetson TX2 module, powered by the Arm Cortex-A57 processor.

“The Cortex-A57 was designed for devices undertaking complex compute tasks, and supports high-performance processing combined with power efficiency, which perfectly mirrors our goals for the Orb,” says Maaløe.

“Efficiency is crucial for edge devices – particularly in an emergency setting. And edge compute has the significant benefit of allowing the Orb to function continuously, even when the internet connection is interrupted.

“Our powerful ML algorithms, deployed on energy-efficient Arm processors, allow the Orb to provide real-time decision support at the frontline, augmenting the capabilities of human dispatchers; and driving faster, more accurate identification of life-threatening states. Ultimately, the Orb helps dispatchers to do their job better –and that means saving lives.”

### For more information on Corti:

[www.corti.ai](http://www.corti.ai)

### See these related links for more information about ML on Arm:

[Arm Artificial Intelligence solutions](#)

[Arm Project Trillium](#)

[Arm Cortex-A](#)

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