PRODUCT BRIEF

DEEPCRAFT™ Ready Model for Cough Detection

A production-ready Edge AI model that detects a person coughing

The DEEPCRAFT™ Ready Model for Cough Detection detects people coughing in the vicinity of a microphone. The sound triggers special functionalities for various use cases; for example, the number of coughs over a period of time can be calculated to determine whether a person's health is deteriorating or if they are in an unhealthy environment.

This model is targeted towards consumer electronics manufacturers that want to distinguish their products by adding intelligent functionalities. Using machine learning (ML) models for these features future-proofs them, which is vital in a fiercely competitive consumer market. The model is designed to operate at optimal efficiency in common environments, guaranteeing a smooth and effective user experience across a range of standard scenarios.

The DEEPCRAFT™ Ready Model for Cough Detection lets companies take AI to production quickly. It is a fully trained, comprehensively tested Edge AI model that is ready for production. This leaves Infineon's customers free to focus on how to best put to the model to use, and to commercialize the added value it brings to their product. If further customizations are needed, the model can be adapted using DEEPCRAFT™ Studio.

Extensive testing has been done on Infineon's PSOC™ 6 Arm Cortex-M4 processor leveraging Infineon's state-of-the-art digital MEMS microphones. During testing, the model was exposed to common indoor and outdoor noises, as well as more unusual background noises and environments to ensure that it stays reliable and effective in nearly any scenario.

For more information visit: DEEPCRAFT™ and DEEPCRAFT™ Ready Models



Key features

- Production ready: complete model, fully tested, and designed for edge devices
- ~95% accuracy from <2 meters away (higher accuracy when model is used to look at long-term crying patterns)
- Optimal model performance in common scenarios
- Optimized for minimal false triggers, even in uncommon scenarios

Key benefits

- Easy to integrate and deploy onto consumer products
- Fast time to market at minimal development cost
- Low memory footprints and inference time – hardware resources freed up for other purposes
- Customizable using DEEPCRAFT™ Studio

Key use cases

- Prompt user to visit a doctor when change in coughing/excessive coughing is detected, especially for elderly users
- Can be used in HVAC systems to tune humidity so that user is relieved
- Can be used to identify potential environmental hazards



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Specification and compatibility

Sensor settings – microphone

– Sample rate: 16000 Hz
– Channels: 1 (Mono)
– Bit depth: 16 bit

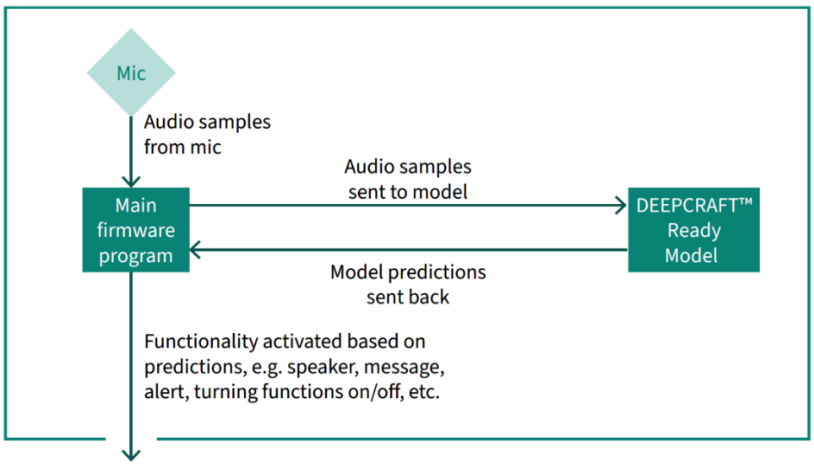
Hardware requirements

– RAM: 128 kB
– FLASH: 85 kB
– Inference time: 150 ms performed every 172 ms

Supported devices

– Infineon microcontrollers
– Infineon XENSIV™ MEMS microphones

Block diagram



Target applications

AR devices / Smart Glasses
Clinical & Hospital Equipment
Home Health Monitoring
Healthcare Wearable & Consumable
Residential Aircon
Smart Watch & Wristband

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