

# Jacoti hearingKIT®

## Hearing Test And Audio Personalization

Advanced Algorithms For Comprehensive Audio Enhancement

### Overview

Jacoti HearingKit® is a software development kit (SDK) that allows developing real-time audio applications with the purpose of adapting the sound to the characteristics of the audio and the listeners themselves, namely their hearing loss or personalisation needs. It offers a cross-platform C and C++ implementation, which is used to provide hearing assessment, hearing loss compensation and sound personalisation on wireless headsets, mobile computers, smartphones, car audio system, TV's, home entertainment or any digital audio system.

Jacoti HearingKit® technology allows compensating the hearing loss of individuals by applying a series of algorithms such as Hearing Loss Compensation (HLC), Automatic Gain Control (AGC) / Wide band dynamic range compression (WDRC), noise reduction and gain maximisation algorithms.

The included fitting and DSP pipelines provide a set of presets or programs tailored to specific listening situations like clear speech, natural sound or music. Jacoti HearingKit® enabled applications typically use its real-time audio processing engine which already handles the cascading of algorithms and provides a simple interface for processing audio frames. However, the Jacoti HearingKit® API also provides the means for independently activating or deactivating the different modules that uses the Jacoti HearingKit® Technology.

### Key features

- ▶ **Hearing Loss Compensation:** The Jacoti HearingKit® API provides out-of-the-box low-latency (2-3 ms) Hearing Loss Compensation (HLC), Automatic Gain Control (AGC), Digital Gain Maximisation, Feedback Prevention, Noise Reduction and Signal Limiter. It supports different profiles depending on the listening situation (music, speech, natural sound, etc.).
- ▶ **Hearing assessment:** Jacoti HearingKit® features an adaptive Automatic DuoTone® air conduction procedure and is partially compliant with type IV audiometer requirements as per EN 60645-1 for Audiometers and ANSI S3.6.
- ▶ **Real time:** Jacoti HearingKit® has been designed for real-time applications. It provides a threaded real-time engine which processes audio at a deterministic time rate.
- ▶ **Seamless integration:** Jacoti HearingKit® is cross-platform, written in C and C++ and doesn't require third-party libraries. It includes bindings in Objective-C (iOS), Java (Android) and Python for easy integration.

Written in C/C++

Delivered as a self-contained static or dynamic library

Algorithmic Latency: 2-3 milliseconds

Frequency response: 10 Hz to 22 kHz

Cross-platform Tested on Linux, Android, Mac OS X and iOS

#### REAL-TIME AUDIO PROCESSING

#### HEARINGKIT® BASE API

##### User Profile

Data Structures  
– Audiogram  
– Program  
Parameters

##### Signal Processing

Hearing Loss  
Compensation

AGC (Automatic  
Gain Control)

Digital Gain  
Maximisation

Noise Reduction

Limiter

##### Hearing Assessment

Jacoti DuoTone®  
audiometry

Jacoti hearingKit® powers Jacoti Hearing Center, Jacoti ListenApp, Jacoti Hearing Center Pro and Jacoti Lola. Jacoti hearingKit® is also part of Jacoti Inside with minimal DSP and memory requirements.

### About Jacoti

Jacoti BV | Hearing Technologies is a science-based company that develops hearing enhancement solutions embeddable in consumer devices. Its flagship product, Jacoti Inside, optimizes audio to each individual hearing requirement from consumer technologies to fully-fledged medical devices.

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