## Hip Replacment Monitoring Based on Audio Signal Processing (Yeda)

**code:** T4-1585

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## Summary

Our scientific team has discovered a method to apply the Gabor Transform to signal processing and data compression. Compared to existing methods that are based on Fourier transform, the new method provides for up to 25% savings in content size for video, audio and images, without any loss in quality. By embracing our method, content providers, ISPs and mobile carriers can achieve major savings in data storage and data transfer costs.

## Applications

The method can be used in virtually all applications involving data storage, communication and signal processing. One of the main commercial application is for lossy data compression for video, audio and images. Those types of content constitute the bulk of today's Internet traffic, and improved compression will generate substantial savings in storage and data transfer costs.The method also applies to the storage, communication and processing of quantum information and may therefore be expected to have applications in quantum calculations, quantum communication and quantum information processing.

## Advantages

Existing data compression methods are based on numerical implementations of the Fourier transform, known as FFT, DCT and similar. Compared to these methods, Gabor transform method demonstrates a very significant advantage in terms of the size of compressed material. The method provides for up to 25% savings in data size, while keeping the same perceived quality of the content.

## Technology's Essence

We have discovered the definitive solution to the problem of obtaining accuracy and stability in the Gabor transform. We realized that there must be an exact informational equivalence between the Gabor transform and the discrete Fourier transform (DFT). The latter is known to provide an exact representation of functions that are band-limited with finite support. Since the DFT implicitly assumes periodic boundary conditions, to obtain this exact equivalence one needs to modify the Gaussians in the Gabor transform to obey periodic boundary conditions. This leads to Gaussian flexibility with Fourier accuracy --- precisely what has been sought since 1946.

**Contact for more information:**

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