

# Tutorial 1 - GPUs for DAFx

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## **Abstract**

Current graphics processing units (GPUs) are massively parallel computation engines, and they have gained lots of popularity in high-performance computing in the recent years. This workshop aims to give a general understanding on the capabilities of GPUs, how the parallel computation is performed on a GPU, and what kind of problems are suitable for parallelization. Two commonly applied ways to utilize GPUs are introduced. While CUDA is the most typically applied programmer-level API, there is a good interface to use a GPU directly from Matlab, as well. The workshop will have several examples on utilization of GPUs on practical real-time audio signal processing tasks.

## **Bio**

Lauri Savioja received the degree of Doctor of Science in Technology, from the Helsinki University of Technology (TKK), Espoo, Finland, in 1999. He majored in computer science, and the topic of his doctoral thesis was room acoustic modelling. He worked at the TKK Laboratory of Telecommunications Software and Multimedia as a researcher, lecturer, and professor from 1995 until the formation of [Aalto University](#) where he currently works as a professor in the Department of Media Technology at the School of Science. The academic year 2009-2010, he spent as a visiting researcher at [NVIDIA Research](#). His research interests include room acoustics, virtual reality, and parallel computation.

Prof. Savioja is a member of the Association for Computing Machinery (ACM), Audio Engineering Society (AES), and a life member of the Acoustical Society of Finland. From 2010 he has been an Associate Editor of the IEEE Transactions on Audio, Speech, and Language Processing.