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Signal Processing and Communications

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**Robust Speech Detection in High Levels of Background Noise**

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Voice Activity Detection (VAD) is a procedure of identifying speech segments within a recording. VAD is utilised in a variety of modern signal processing applications such as speech recognition, enhancement, transmission and coding. While VAD is a relatively simple task for clean recordings it becomes increasingly difficult as the power of the background noise rises. Over the recent years, researchers have proposed a number of approaches to VAD, however, the lack of standard methods for their evaluation makes it difficult to compare VAD algorithms objectively. This work contains a comprehensive literature survey of the existing VAD methods, their implementation as well as an objective evaluation through the use of identical test sets and unification of the algorithms' shared parts which could otherwise bias the results. Finally, an attempt to use one of the recently published pitch tracking algorithms as a Voice Activity Detector is described and its performance is examined. This approach has been shown to considerably outperform (on average) the best performing VAD method from the previous evaluation at the very high background noise levels i.e. when the SNR is in the range -5 to -15 dB.