

STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

A2 15 mV

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200mV

20mV



0.1 500ns

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11. Measured Temporal Parameters

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11.0 Abstract

Speech communication is often realised by two ways, monologue and dialogue modes. The temporal (time) attributes, such as active and non-active parts of both of these varies because of the nature of the modes. In monologue modes of speech communication activity of each user remains 80% and 20% are the silences and in dialogue (conversational) modes it is 40% and 60% respectively. The temporal attributes and properties of both speech communication modes can be utilised for better bandwidth efficiency. These chapters a statistical data regarding these activities for both modes are provided.

The measures of the temporal parameters are prepared from a database to model the speech sources to avoid unnecessary use of real speech sources on each link of the multiplexer.

The measured parameters are represented as activity in percentage, talkspurt durations, means and cumulative distribution functions (CDF) as a measure of frequencies of temporal parameters. Similarly the silence durations are also presented.

For preparing a reference database for temporal parameter measures, the visual activity monitoring is carried out over coded speech by playing codecs back to back, which is then, supported by the measured reference activity detected by the VAD without hangover (0 hangover). Ideally if the visual error occurs zero, that means that if all the silent and active frames are detected respectively, then both measured reference (visual and without hangover) should agree in all aspects of statistical measures. Keeping these statistics as references, the VAD hangover is increased by a single frame of speech (20ms), and then set to a maximum of 4 speech frames (80ms), which is the largest hangover setting. The effect of such hangover on the statistics of the speech database is presented in following sections.

11.1 Visual Inspection of Speech Signal

For-the preparation of visual reference throughout the speech database, each individual frame of speech is inspected to identify speech (active frame) or silent (non-active) frame. The duration of talkspurts and silences are then determined from recorded speech data. As shown in figures the effects on the statistics of the talkspurts and silence durations. It is interesting to note that when