Some properties of the glottal AQ parameter automatically measured in expressive speech

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ABSTRACT
The glottal Amplitude Quotient (AQ) is an acoustic parameter proposed by Alku & Vilkman (1996), which quantifies phonation quality along the pressed-modal-breathy continuum. In contrast to the prevailing data reported in the literature to date, where measurements of AQ have been limited to carefully selected speech sounds such as sustained "a", we report methods of automatically measuring AQ in large amounts of natural, continuous speech. Our unsupervised algorithms first locate centres-of-reliability in the continuous speech stream, where the formants, the glottal-flow waveform, and hence the glottal-AQ parameter, can all be measured more reliably. These automatic methods are used to measure AQ in a large, single-speaker database of recorded, emotional speech. In a first evaluation of these measurements, we examine the phonetic, prosodic, and emotion-related distributions of AQ. The aim of the present research is ultimately to gain the flexibility of voice-quality control in concatenative speech synthesis, by quantification and judicious labelling of the voice-qualities of individual speech segments stored in the unit-database.