



Modelling and Simulation in Engineering

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Research Article

Real-Time Vocal Tract Modelling

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Abstract

To date, most speech synthesis techniques have relied upon the representation of the vocal tract by some form of filter, a typical example being linear predictive coding (LPC). This paper describes the development of a physiologically realistic model of the vocal tract using the well-established technique of transmission line modelling (TLM). This technique is based on the principle of wave scattering at transmission line segment boundaries and may be used in one, two, or three dimensions. This work uses this technique to model the vocal tract using a one-dimensional transmission line. A six-port scattering node is applied in the region separating the pharyngeal, oral, and the nasal parts of the vocal tract.

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