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Modern Mathematical Methods of Speaker Identification

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In recent years tasks of speaker identification and verification gained additional attention. Indeed, systems of automatic speaker identification and verification seem to be the most natural and economical methods for solving the problems of unauthorized use of computer and mobile devices. Such an approach has several advantages. For example, a person's voice cannot be forgotten or misplaced unlike password or key, the system can be made robust against noise and channel variations, human changes and mimicry by humans or records.

It worth noting what is the difference between speaker identification and verification. During identification a system decides which one from a group of voices best matches the input voice sample. Speaker verification is a process of verification a person's claimed identity from her voice.

This article is an attempt to make a review of mathematical methods and models used to construct a modern system of automatic speaker identification. We consider such methods as Gaussian Mixture Models with Universal background, Support Vector Machines, Sparse representation methods. These models are presented and some experimental results are provided.

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