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Modeling topic control to detect influence in conversations using nonparametric topic models

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Abstract Identifying influential speakers in multi-party conversations has been the focus of research in communication, sociology, and psychology for decades. It has been long acknowledged qualitatively that controlling the topic of a conversation is a sign of influence. To capture who introduces new topics in conversations, we introduce SITS—Speaker Identity for Topic Segmentation—a nonparametric hierarchical Bayesian model that is capable of discovering (1) the topics used in a set of conversations, (2) how these topics are shared across conversations, (3) when these topics change during conversations, and (4) a speaker-specific measure of "topic control". We validate the model via evaluations using multiple datasets, including work meetings, online discussions, and political debates. Experimental results confirm the effectiveness of SITS in both intrinsic and extrinsic evaluations.

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