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An Audio-Visual Approach to Learning Salient Behaviors in Couples' Problem Solving Discussions

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Motivation & Objective

- Human behavior is inherently complex and multimodal
- We present a method of fusing audio and visual information for modeling human behavioral expressions in the context of couples' problem solving discussions
- We demonstrate performance gains achieved through multimodal fusion for predicting human annotated behavioral codes

Data

Couples Therapy Corpus

- Audio-Visual recordings of 134 married couples
- Ten-minute dyadic interactions of the couples discussing a problem in their marriage
- The sessions were manually annotated for relevant behaviors at the session level
- For this work we model *acceptance* and *blame*



Linear SVM

Linear SVM

Polynomial SVM

Mode

Prediction

Methodology







Visual Feature Extraction



Multiple Instance Learning



Experimental Results

Classification accuracy (%) using audio, visual, and audio-visual fusion

behavior	audio	visual	fusion	
			early	late
acceptance	70.5	62.5	64.3	72.3
blame	69.4	57.4	70.4	71.3

Late fusion improves accuracy for classification of both behaviors

Salient instance representations of couples' problem solving discussions



Conclusions & Future Work

- We have demonstrated a method for combining audio and visual information, using a multiple instance learning approach for saliency estimation, and predicting human annotated behavioral ratings
- Late fusion outperformed early fusion for both behavioral codes
- In the future, we would like to explore how this methodology performs on other behaviors
- Study how spouses influence one another's behaviors throughout each session
- Explore different ways to model saliency