**Quantitative Observational Practice in Family Studies (3 of 3)**

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**Goal:**
- Transform observational behavior analysis
- Through computational framework
- Modeling of emotionally-rich human interactions
- Signal processing and machine learning
- Existing family therapy data
- Alleviate the tedium of manual annotation
- Offer new analysis capabilities and empower the mental health experts

**Significance:** USA-10mil people receive psychotherapy every year and state of the art hasn’t changed for decades

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**Data used**
- Audio/Lexical and Visual subsets used
  - Use top/bottom 20% for audio, lexical and 25% for video
  - Choose subsets with acceptable audio/video qualities
  - Used 6 codes with highest human agreement
  - Some distributions skewed and not very separable

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**Multiple Instance Learning: Instances**
- We consider each session a “bag” of “instances”
- Instances are varying-length speaker turns or equal-length windows
- Each instance conveys particular behaviors of interest with varying degrees
- MIL is a method for identifying the “salient instances”, i.e., the local events that most greatly affect the final rating assigned to the session

**Session Level Feature Extraction**
- Salient feature identification:
  - Bag of instances
  - Distance of session features to salient prototype features

**Summary and Future work**
- Explored saliency in MIL framework
- Explored saliency in multiple modalities
- Explored low-level instance features and deriving high-level session features
- Temporal dynamics of salient events for reactivity
- Explore alternative measures for saliency, such as knowledge inspired signal cues (e.g., laughter, crying)

**Citations. Acknowledgments**
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