**Literature review Summary**

1. Emotion in speech signals

[3] Speech is a non-linear time sequence signal closely related to time and emotion in the speech signal is context-sensitive information.

1. Emotions in HCI

[4-2] Many studies and research on affective computing increased awareness of the important role of emotion in human-computer interactions. Studying emotion theory is not only acknowledged in the HCI discipline but also expanded across many other areas of interest such as recognition and synthesis of emotion in face and body, and the influence of emotion on information processing and decision-making[4-2].

Adding emotion into computers is needed for more practical goal to function with intelligence and sensitivity towards human[4-1].

1. Availability of Emotion annotated database
2. Challenges of Emotion annotation

* [20]Emotions expressed through multiple modalities simultaneously but when annotating, the focus is usually on one single modality
* [20]The subjectivity of most annotation tasks; heavily depends on the reader’s interpretation and human usually don’t agree with each other.
* [20] increasing training improved agreement scores by Bayerl; contradicting opinion by Mohammad, over-training annotators led to confusion and apprehension in judgment tasks

1. Single modal feature extraction vs multi-modal fusion

[3] In the process of single modal feature extraction, noise data and repetitive information have been generated which makes it harder to obtain a quality dataset, thereby affecting emotion recognition performance. [3] states that using unimodal emotion feature cannot fully describe a certain emotion of the user at the moment, whereas multimodal features allow capturing more comprehensive and detailed emotion. In addition, [3] mentioned about certain emotional information associated within and between different individual modalities, so multi-modal emotion data tries to portray the current emotion of a user from different angles which provides additional emotional information.

1. Nature of how data collected

* [20]Lab setting/ acted dataset vs data collection in the real world

1. Emotion models

Categorical :

* Ekman’s six core emotions(anger, fear, happiness, sadness, surprise)
* Plutchik’s eight core emotions (anger, anticipation, disgust, fear, joy, sadness, surprise, trust)

Dimensional:

* 2D Russel’s Circumplex space model: valence & arousal levels
* Scherer: Russel + 80 more emotion words added on

1. Existing Emotion annotation tools
   1. 1D vs 2D // Continuous vs per frame annotation
   2. Pros and cons of each annotation tools
   3. Similarity and differences
   4. Evaluation of the tools if possible

* FEELTRACE using joystick: drawback- delays between the annotation and the video, laps in concentration, inaccuracy of annotation due to sensitivity of joystick/ slider, inability to annotate remotely or online

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1. Joysticks or mouse based tool comparisons
2. Preferred Platform type for user these days
3. Improvement in existing design
4. Plan for system validation (Survey)