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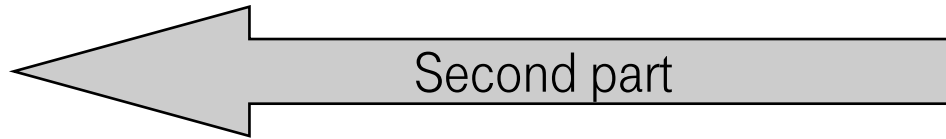
Emotion Detection in Dialog Systems: Applications, Strategies and Challenges
Felix Burkhardt, Markus van Ballegooy, Klaus-Peter Engelbrecht, Tim Polzehl, Joachim Stegmann



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

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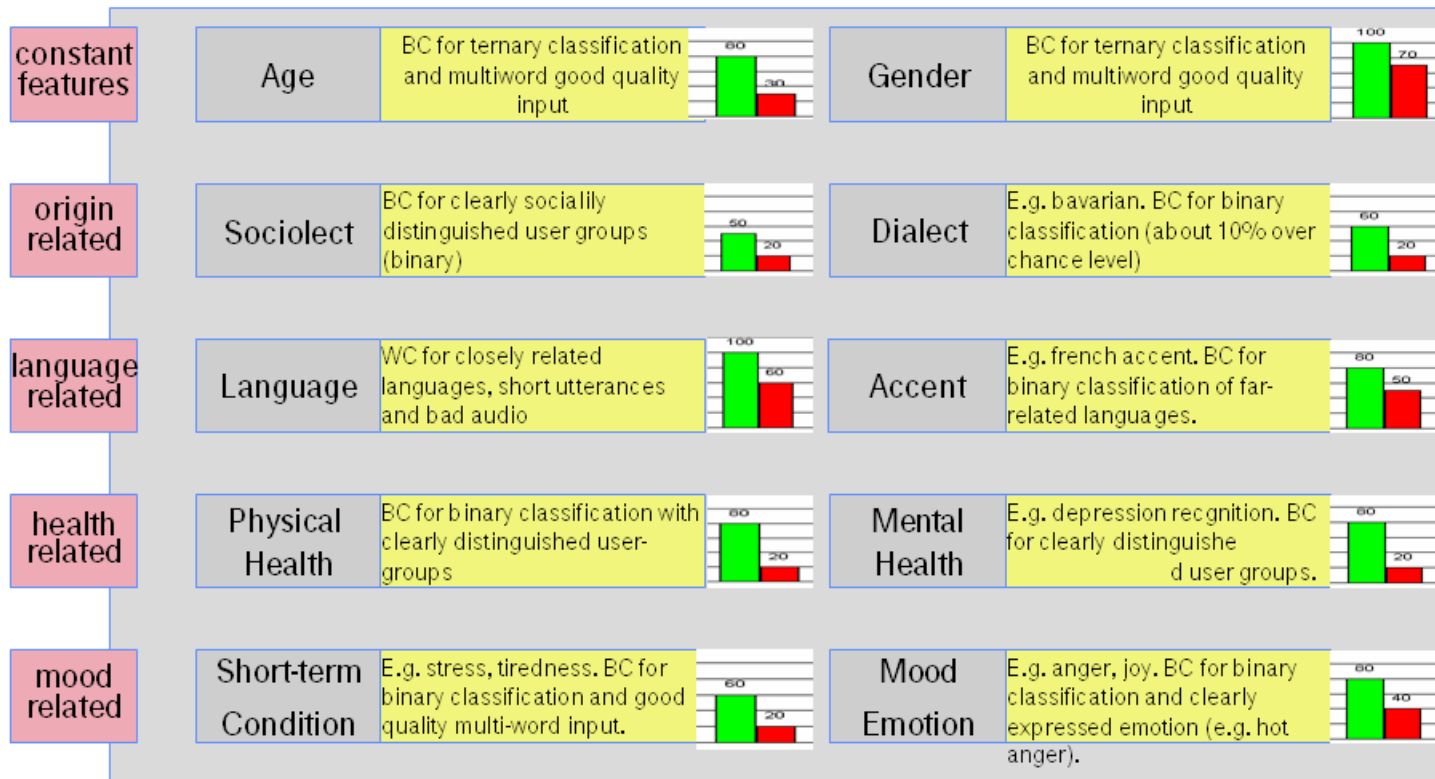
- Applications
- Challenges
- Strategies



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Prerequisites

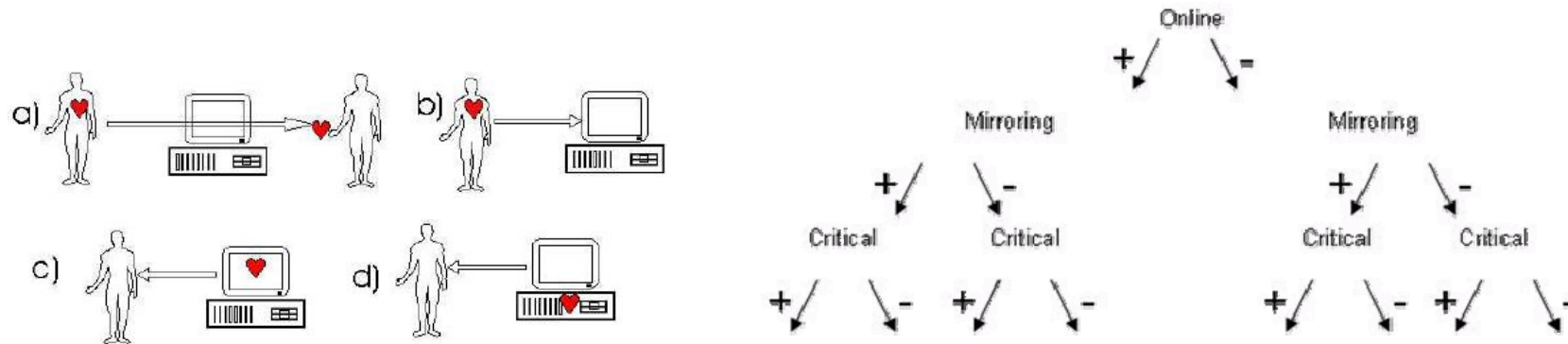
Emotion recognition part of Speech Based Classification



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Applications

- Ways to classify applications



<http://emotionalapplications.syntheticspeech.de/>



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Applications

Some ideas

- Fun applications, e.g. “how enthusiastic do I sound”
- Problematic dialog detection
- Alert systems, i.e. analysis of urgency in speaker’s voice
-
- Adapted dialog and/or persona design
- Believable agents, artificial humans



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Applications

Some conciliation strategies in dialogs

- Distraction/ change of topic, without showing an interest for the negative emotions
- Providing information, which rebuts the possibly wrong assumptions that led to a negative emotional state.
- Feedback / Mirroring the perceived emotions in order to show awareness for the communicators emotional state.
- Emphatic utterances, that show ones' sympathy for the communicators emotions
- Further encouragement of the communicator to express his emotional state
- Pointing out alternatives for being angry or frustrated
- Humor / Joking / Teasing. Reason (appeal to the communicators senses)

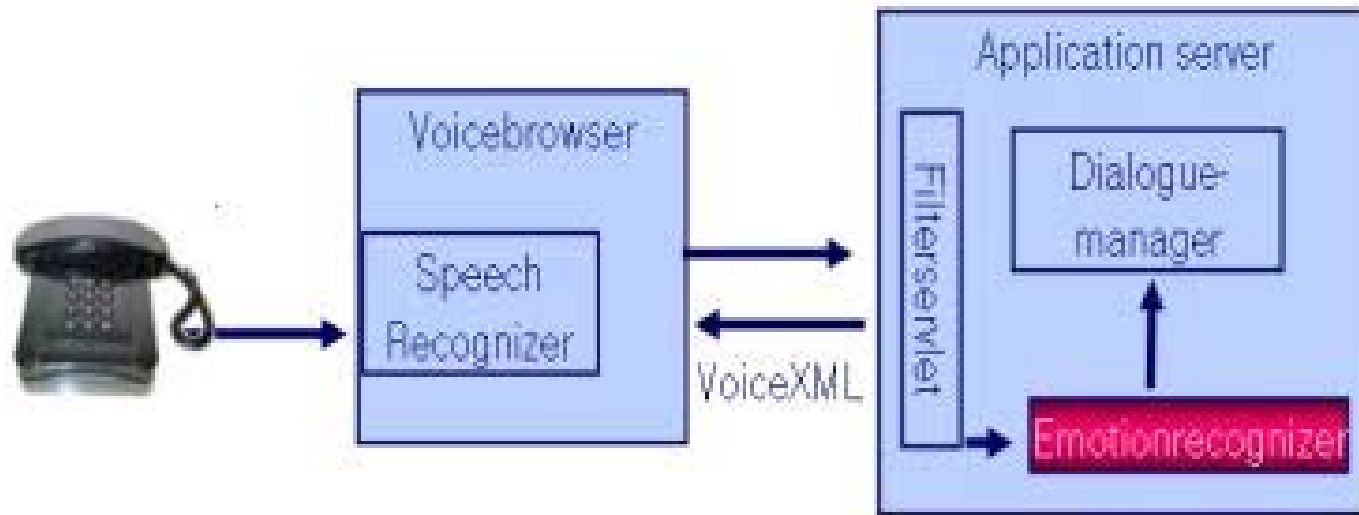


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Applications

What did we do

- Voice portal anger detection

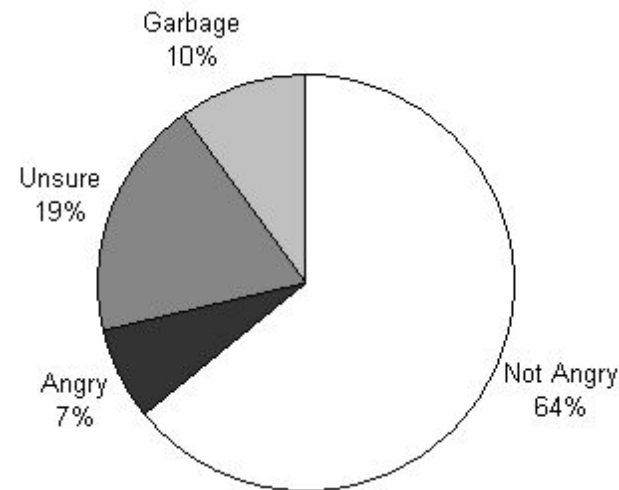


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Applications

What did we do

- Collected 22 hours of tuning data
- Three labelers annotated on 1-5 + garbage anger scale



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Applications

What did we do

- Experimented with GMMs and SVM and different feature groups

Classifier	average f1	average recall
Exp.1: GMM w. other training	0.46	0.55
Exp.1: GMM w. duration feat.	0.58	0.57
Exp.1: SVM w. duration feat.	0.66	0.67
Exp.1: GMM reduced feat.	0.61	0.61
Exp.1: SVM reduced feat.	0.70	0.69
Exp.2: GMM w/o priors	0.68	0.67
Exp.2: GMM with priors	0.70	0.69



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Challenges

- What is an emotion?
- Data collection (egg-hen problem)
- Strange data
- Industrial deployment requirements
- Emotional behavior implicates intelligence



Emotion Detection in Dialog Systems: Applications, Strategies and Challenges

Conclusio

- Challenges
 - Difficult, noisy data
 - Unclear what the target emotion is
 - Emotional behavior implicates intelligence
- Strategies
 - First step non-critical applications
- But
 - Humans do it,
 - We can do it! *“I think it’s not impossible (Euler)”*

