

First Prototype Evaluation

Research questions

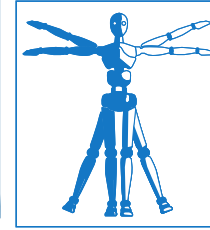
- Does speech plus generated music fit together?
- Is the emotion similar?

Preparation

1. Chain speech samples emotion-wise
2. Generate music to each emotion & save it
3. Randomly overdub emotional speech with music
 - 1. Class: emotionally *congruent sound files*
 - 2. Class: emotionally *not congruent* sound files

Questionnaire

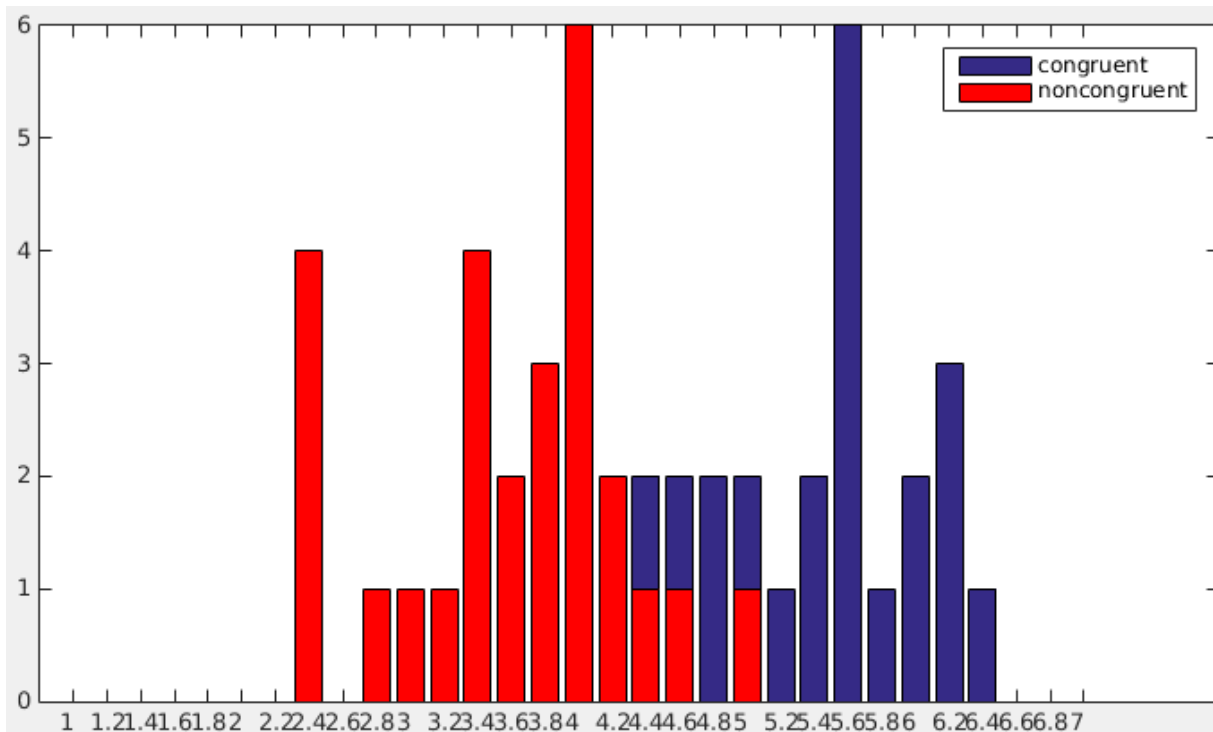
- Subjects rate congruence from 1-7
- 12 sound files presented to 28 subjects

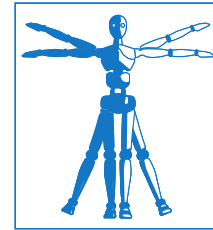


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Results

- Congruent files were rated as significantly more congruent compared to non-congruent files:





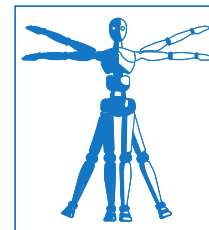
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Conclusion

The prototype conveys emotion from speech to generative music reasonably.

Future Work

- Make training easier
- Explore fields of application
- Make it ready for live usage
- Research
 - Does it support communication of emotions?
 - Does it increase intelligibility of speech?
 - Does it help mentally disabled people, e.g. ASD?
 - -> early childhood development



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Technical Details

Emotion Recognition

- Training Data: Berlin Database of Emotional Speech
 - Sliding window: 3s
- Classifier: 2-Stage
 1. GMMs for Emo-Pair classification
 2. AdaBoost for separation of Emo-Pairs
- Accuracies: 75% - 80% (stable)

Evaluation

- Despite much data no normal distributions
 - 1-sample Kolmogorov-Smirnov test fails on 5% sig. level
- The 2 distributions are significantly different at a level of $8 \cdot 10^6$ (Wilcoxon signed-rank test)