

# Ironic Speech – Evaluating Acoustic Correlates By Means Of Speech Synthesis

Felix Burkhardt, Alexandra Steinhilber and Benjamin Weiss

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## Abstract

We describe an approach to evaluate the acoustic correlates of ironic speech by means of speech synthesis. We manually applied strategies found in literature on a database recorded in earlier work and evaluated them in a listening experiment.

## Short version

Verbal irony occurs when someone says something that is obviously not expressing the real intention or meaning; sometimes it is even the opposite. We conducted an experiment earlier to investigate verbal irony by distributing a smartphone application that recognizes ironic speech and collecting data by a group of test persons. This data is now the basis for further investigation.

In this experiment, we manually extracted specific acoustic strategies to generate an ironic expression and synthesized them with a speech synthesizer with the aim to evaluate the perceptual relevance of these strategies. We specifically investigated four distinguished rules: exaggerated articulation, over-stressing the main focus-syllable, raising the pitch at the end and speaking with extremely low arousal.

We then recorded four German sentences from our database, two of them with a strong potential for irony and two with a much lesser potential. An example for the former would be “Ich liebe Regenwetter” (I love rain) and an example for the latter: “Das ist wunderschön” (This is really beautiful).

We recorded these sentences with a male and a female speaker each, spoken with a neutral expression. The prosodic and phonetic descriptions of these recordings were then extracted based on a manual phonetic transcription with a spectrographic analysis software (Wavesurfer).

The resulting PHO-files (input for the Mbrola synthesizer [2]) were assigned a focus syllable manually and then processed by the Emofilt [2] emotional software to apply the above mentioned strategies on the neutral version. We used a male and a female voice for all four sentences and compared each of the four rules plus the neutral version pair-wise, so we ended up with 80 comparisons (5\*2 comparisons times two speakers times four sentences).

These were played via a web listening test to 31 native German people, each answering the question for all comparisons: “which of the sentences sounds more ironic?”

In the paper we’ll explain our approach in more detail and report on first results.

[1] Emofilt: <http://emofilt.syntheticspeech.de/>

[2] Mbrola: <https://github.com/felixbur/Speechalyzer>