

Determining Environmental Context from Fictional Narratives

Abstract

Experiencing a narrative can be made more enjoyable and powerful by increasing the level of the immersion. This can be achieved through contextual cues, such as sounds and images. In order to provide these cues automatically, we attempt to detect parts of the environment described in a fictional narrative. We present three machine learning approaches to this problem, compared to a rule-engineered baseline, and evaluate them over a dataset of fictional texts. In addition, we analyse the performance of this system over the output of a text-to-speech system taking the same narratives as input. This audio dataset is made available. The system is able to recognise environmental context and respond appropriately.

1 Introduction

adding music changes mood, useful for immersion and positive experiences. we will take narratives as input. then, we'll work out the mood and appropriate environment music from text. there is a diverse range of environments. also, sfx for surprise events, like an approach horse, horses, thunder. harder mode: work from text-to-speech.

(Madden and Logan, 2009) (Huiberts, 2010)
topic extraction (Allan, 2002)

2 Method

2.1 Dataset

For this dataset, we used paragraphs from a set of role-playing books (Sharp et al., 1989; Livingstone, 1987; Darvill-Evans et al., 1989; Jackson, 1984). Each paragraph is set in a distinct location, making manual environment annotation simple and distinct. The set of potential environmental items in this genre is:

- Mountain
- Hill
- Forest
- Swamp
- Windy
- Blizzard
- Rain
- Lightning
- Stream
- River
- Campfire
- Night
- Meadow
- Road
- Town
- Crowd
- Tavern
- Underground
- Trotting horse
- Galloping horse

Paragraphs were labelled with one or more of these labels by a human annotator. In total, X paragraphs were labelled.

2.2 Spoken dataset

An eventual use of this system is to provide automatic sound effects for a read story. As a result, it should operate well on the output of a speech recognition system. Paragraphs were read by an English native speaker, and recorded. A speech recognition system (Lamere et al., 2003) then interpreted these readings and generated a textual representation for each paragraph. The labels used in the text input corpus were then associated with these outputs. This constitutes the spoken dataset.

2.3 Baseline

Trigger words of the name of the environment (swamp, rain, etc)

2.4 Features and Classifier

method: bag of n-grams + multiple nbayes; LD feature extraction (Lui and Baldwin, 2011) + nbayes; bag of word reprs (w2v) (Mikolov et al., 2013) + multi-svm

3 Results

4 Related Work

KidsRoom (Bobick et al., 1999).

ML doc classification (Sebastiani, 2002).

NN good at binary doc classification (Derczynski, 2006).

SVM doc classification (Isa et al., 2008).

5 Conclusion

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