Recommendations for cocktail recipes

Sigurd Sippel
Goal
recommendation by example
Leading question
Application: Recommendation for cocktails in bar

Have a distance function a sufficient precision for recommendation?

Threshold for sufficient precision

Recommendation is according to expert knowledge
Sources

- social Media
- historic books

KDD

- preprocessing
- feature extraction
- clustering
- recommendation

[FPSS96]
Text Mining methods

- Unknown features
- Preprocessed examples
- Complex preprocessing
- Prior knowledge
- Distance function
- Specification
- Preprocessing
Preprocessed examples

```xml
<cocktail>
<title>Negroni</title>
<ingredients>
  <ingredient><quantity><value>3</value><unit>cl</unit></quantity><name>süßes Vermouth</name></ingredient>
  <ingredient><quantity><value>3</value><unit>cl</unit></quantity><name>Gin</name></ingredient>
  <ingredient><quantity><value>3</value><unit>cl</unit></quantity><name>Campari</name></ingredient>
  <ingredient><quantity><value>1</value><unit>cl</unit></quantity><name>Orangenzeste</name></ingredient>
</ingredients>
<preparation>stir</preparation>
<glass>cocktail glass</glass>
</cocktail>
```
Extraction with background knowledge

spirit

gin

mezcal

Plymouth

Tlacuache

one step

attributes

different kind of leaves

similarity factors
Different kind of properties

spirit

barrel-aged

preparation

preparation

whiskey

kindof

kindof

kindof

kindof

Citadelle Reserve

Plymouth

mezcal
Example: Negroni

3 cl sweet Vermouth
3 cl Gin
3 cl Campari
1 orange twist

3 cl Punt e Mes
3 cl Plymouth
3 cl Campari
1 orange twist

3.5 cl Carpano Antica Formula
3.5 cl Tlacuache silver Leyenda
2 cl Gran Classico

same idea
adaption
Distance function precision

- chinin
- bitter liquore
- gentian

Campari
Gran Classico

dependent on
- ontology quality
- feature weight
Balancing

Collins
5 cl Gin, (47 % alcohol, 53 % water)
3 cl lemon juice(5 % acid, 95 % water),
2 cl sugar syrup(2/3 sugar, 1/3 water), 20 cl soda(100 % water)

Manhattan

Collins

\[
c(\text{alcohol}) = \frac{(5 \times 0.47)}{30} = 0.078 \\
c(\text{sugar}) = \frac{(2 \times 2/3)}{30} = 0.044 \\
c(\text{acid}) = \frac{(3 \times 0.05)}{30} = 0.005 \\
c(\text{water}) = \frac{(5 \times 0.53 + 2 \times 0.95 + 2 \times 1/3 + 20)}{30} = 0.841 \\
\text{balance} = (c(\text{alcohol}), c(\text{sugar}), c(\text{acid}), c(\text{water}))
\]
Preprocessing

dot, new line with upper case -> end

number, string, dot, newline

keywords: stir, strain, cocktail glass

useless character
Preprocessing challenges

- independent rules
- possible character errors
- semantic of numbers
- prefix and postfix
- begin and end
- free description text
Begin and end
Clustering

test set
feature extracted examples
publish
falsification

preprocessing
extraction
clustering

historic books
Evaluation with users

everyone

click behavior [ANH13]

implicit

time visit

using recommendation [OKKY14]

domain experts [LWL14]

validity

same opinion

explicit

acceptance [ZXGC14]
Expert requirements [McD83]

point of interest

acceptance < same opinion

king of the road
Expert knowledge evaluation

- recommender system
  - expert 1
  - expert 1
  - expert 2

- win or loose
Evaluation

- cocktail pairs
  - within a cluster
  - max different
  - nearest neighbor

check with expert knowledge

same | adaption | lightly similar | different
Roadmap

project 1

feature extraction

clustering

recommendation

project 2

preprocessing

more Sources

evaluation
Sources


[OKKY14] Oh, Jinoh ; Kim, Sungchul ; Kim, Jinha ; Yu, Hwanjo: When to recommend: A new issue on {TV} show recommendation. In: Information Sciences 280 (2014), Nr. 0, 261 - 274. http://dx.doi.org/http://dx.doi.org/10.1016/j.ins.2014.05.003. – DOI http://dx.doi.org/10.1016/j.ins.2014.05.003. – ISSN 0020–0255