

Background & Goal

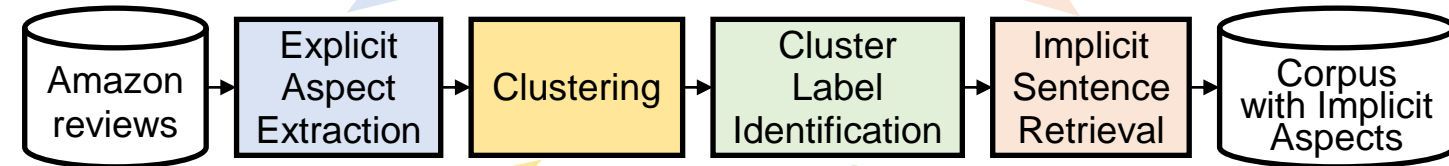
- Aspect-based sentiment analysis (ABSA) plays a vital role in opinion mining
- Two kinds of aspects
 - * **Explicit aspect**: The **battery** of the phone lasts many **hours**, so it does not need to **charge** frequently.
 - * **Implicit aspect**: I don't use it anymore as I get tired of always **recharging** after using just for a few **hours**.
- Our goal**: to construct a large-scale corpus annotated with implicit aspects automatically

Evaluation

- Data**: 10,000 reviews about mobile phones in Amazon
- Six implicit aspects are aimed
- Promising results are obtained (except for "size")
 - * 20 to 400 sentences with implicit aspects are retrieved
 - * 0.58 to 0.82 accuracy for implicit aspect identification
 - * There are only a few review sentences that mention the size of mobile phones in the dataset

Implicit Aspect	# of clusters	# of sentences		Accuracy
		Explicit	Implicit	
battery	28	274	393	0.82
case	15	66	74	0.74
look(design)	24	234	252	0.58
size	2	13	7	0.14
screen	7	115	21	0.76
price	20	342	100	0.78

Proposed Method



- CRF model is trained from SemEval 2014 dataset

- Add cluster label to unlabeled sentences as implicit aspect

- By k-means
- Sentences are represented as vectors using SCDV
- Number of clusters = 10% of total number of sentences

- Cluster label = aspect
- Most frequent aspect is chosen
 - Frequency of aspect: $Fre(a)$
 - Occurrence of aspect in sentences: $Oc(a)$
- Discard the cluster if $\frac{Fre(a)}{\# \text{ of sent. in cluster}} < T_r$

example

no	review sentence	explicit aspect	cluster label Identification
1	For the prices, was n't worth sending back & is really for those few times away from home or do n't have outlet handy & the battery gets really low anyway .	price, battery	$Fre(\text{design}) = 2$ $Fre(\text{battery}) = 2$
2	Like it but it causes the battery to get really hot and lock the phone .	battery	$Oc(\text{design}) = 3$ $Oc(\text{battery}) = 2$
3	I really like the design , but however the casing did not snap nicely with my phone in place .	design	$\frac{2}{5} \geq T_r(0.1)$
4	took a while to get to me its really cute design just hard to come off which is good and bad i guess good because its secure if you drop the phone and bad because you may have to use something to get it open to clean or switch cases in any event i like its hard rubber and design .	hard rubber, design	design
5	I would have given it one star since it really does n't hold a charge or even charge for that matter , but I decided to add another for the decoration of the case although the kickstand is extremely flimsy and half of the time wo n't even hold up my phone .	none	implicit aspect

cluster