How helpful is your review?

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Motivation & Goal

Hard to identify the quality of online products simply via images, or videos. Other customers' reviews are more convincing than product descriptions. Identify prominent features of helpful reviews. We define **helpfulness** as the ratio of number of likes over total number of votes

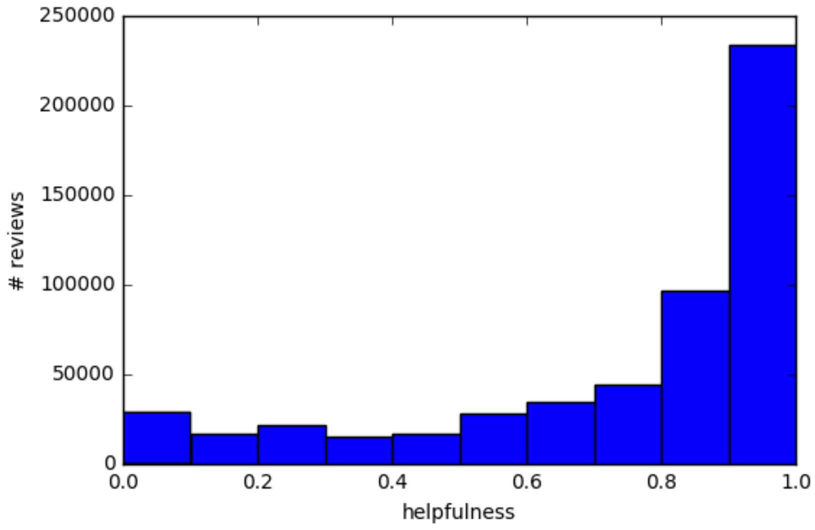
Dataset

100GB+ json file containing users' reviews on Amazon products

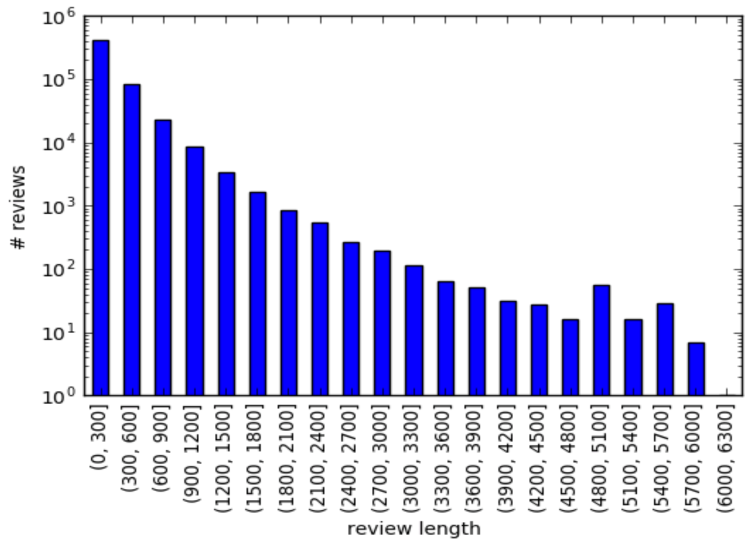
Category	Size (Bytes)
Beauty	731701483 (~730MB)
Books	6952783152 **(~7GB)**
Electronics	2110130573 **(~2GB)**
Kindle Store	12501007 (~12MB)
Musical Instruments	101143085 (~100MB)
Office Products	258605466 (~250MB)
Pet Supplies	324027342 (~320MB)

Statistics

1. *Helpfulness* distribution (more than 10 votes)



2. *Review length* distribution



Features

Category	Features
Intrinsic	review score review length summary length
Social	item rating (mean) user rating (mean)
Linguistic	# various punctuations # pronouns
Psychological	sentiment (anger, anxiety, etc.) insight, analytic, authenticity

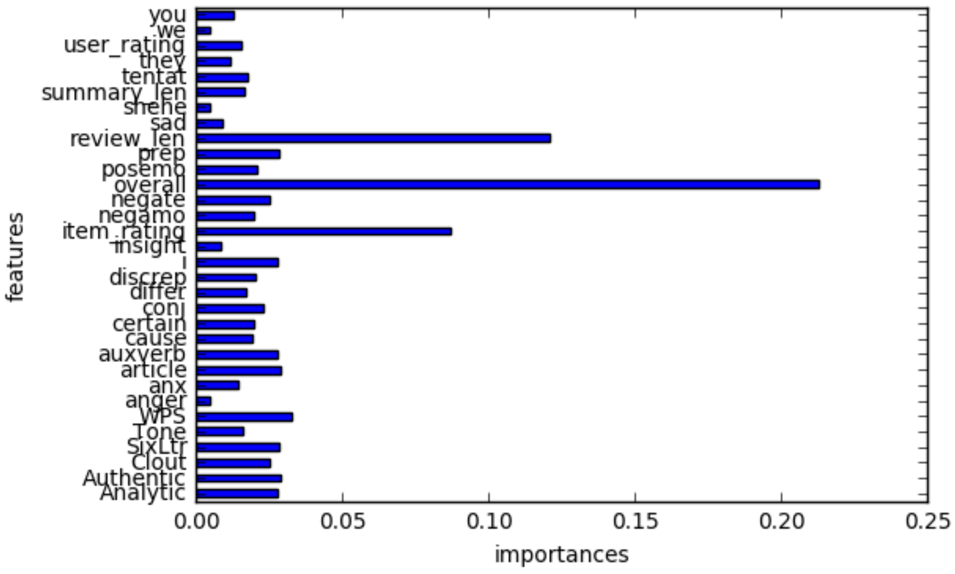
Regression

MSE of different models of Electronic category

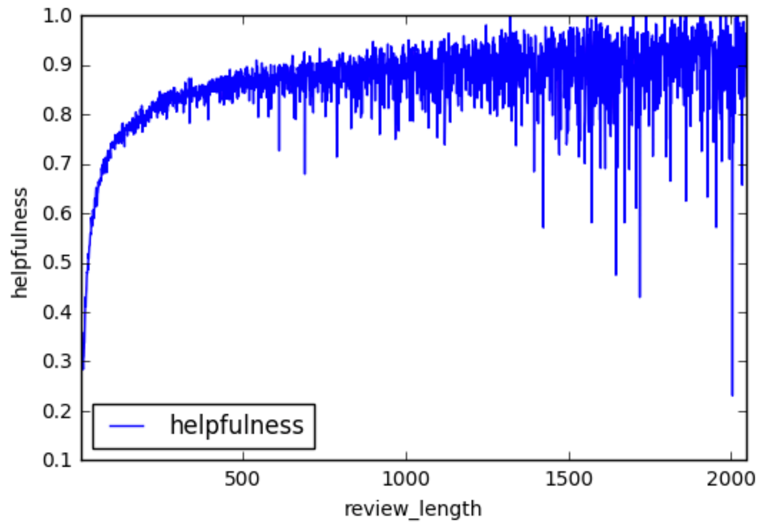
Model	MSE
Multilayer Perceptron	0.065
Random Forest	0.036
Support Vector Regression	0.257
Ridge Regression	0.056

Feature Importance

Use random forest to see feature importance



Relationship between review length and helpfulness



Conclusion

- Most people tend to write short reviews and most reviews with at least 10 votes are useful
- Random Forest achieves the least error
- Most common important features cross all categories are ***review score, review length, item average rating, WPS (word per sentence) and i***.
- Different categories have specifically important features, e.g. *negate* in Beauty category