Objective:

According to tech reporter Amrita Khalid, “One of the many risks of shopping online… is getting duped by deceptive or false reviews into buying an inferior product. Fake reviews have proliferated in every area of e-commerce, from electronics to clothes to books to children’s toys.” ([How to Detect Fake Reviews](https://qz.com/1758846/how-to-detect-fake-reviews-while-shopping-online/))

The ability to find and flag fake reviews is beneficial for a business to preserve their reputation, and to consumers to prevent purchasing products that are over-priced and/or poor quality. Our proposal is to accomplish this via a mix of Natural Language Processing (NLP) and Social Network Analysis to search for fake reviews on [Shopping.com](https://shopping.com/).

Data:

We propose to use Social Recommendation Data obtained from the “[Recommender Systems Datasets](http://cseweb.ucsd.edu/~jmcauley/datasets.html)” assembled by Julian McAuley, from UCSD.

The Epinions dataset is a collection of general consumer reviews (NLP) and trusted relationships (Social Network data) from Shopping.com.

|  |  |
| --- | --- |
| **Metric** | **Count** |
| Number of users | 116,260 |
| Number of items | 41,269 |
| Number of ratings/feedback | 181,394 |
| Number of social relations | 181,304 |

The dataset is comprised of three files:

|  |  |
| --- | --- |
| **File** | **Description** |
| Epinions.json | Contains all the reviews, along with supporting information |
| Network\_trust.txt | Formatted like this, “lavenderfruit trust kristinafh” |
| Network\_trustedby.txt | Formatted like this, “lavenderfruit trustedby kristinafh” |

Plan:

* Use NLP to look for Fake Reviews/Reviewers (see “Detecting Fake Reviews” section below)
* Leverage the social network to identify who trusted the fake reviewers from the NLP analysis and flag these reviewers
* Combine the results of the prior steps into deliverables of probable fake reviews and reviewers
* Stretch: build a model that attempts to identify future fake reviewers

Detecting Fake Reviews:

Here are a few quotes from the previously cited article, “[How to Detect Fake Reviews](https://qz.com/1758846/how-to-detect-fake-reviews-while-shopping-online/)” to get us started with criteria to look for to flag fake reviews…

1. If one reviewer trusts another reviewer and both reviewers write a number of “questionable” reviews – flag them
2. Is the reviewer’s review history filled with similar five-star critiques, singing the praises of random products such as laptop stands and off-brand iPhone chargers? Chances are you’ve caught a professional fake reviewer.
3. If a large number of users who reviewed the item only have a single review in their history, they may be fake accounts.