Mobile Application User Review Based Feature Request and Bug Discovery

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Presentation Structure

- Introduction
- Current Progress
- Future Directions

Introduction

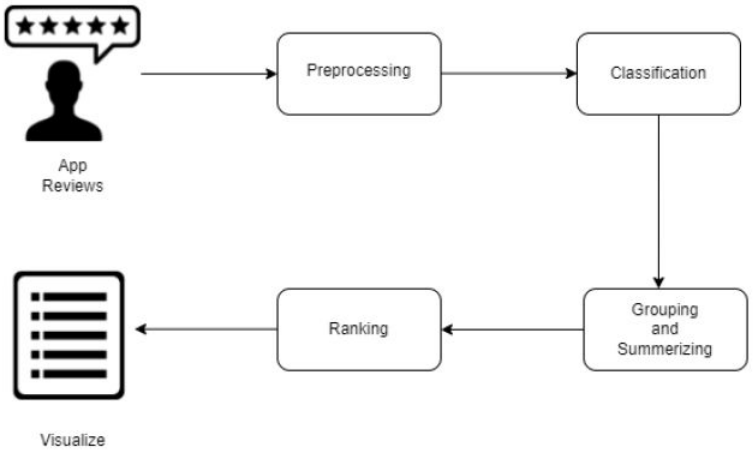
- Recap
- Proposed Approach

[30] J. Verma and A. Patel, “Evaluation of unsupervised learning based extractive text summarization technique for large scale review and feedback data,” Indian Journal of Science and Technology, vol. 10, pp. 1–6, 05 2017.

Introduction: Recap

- Introduction to research.
- Importance of user feedback in the context of mobile app development
- Types of user feedback.
- Problem with raw user feedback.
- Pre-processing techniques.
- Summary of existing approaches.
- High level solution.

Introduction: High Level Solution[15,18]



[15] N. Chen, J. Lin, S. C. Hoi, X. Xiao, and B. Zhang, “Ar-miner: mining informative reviews for developers from mobile app marketplace,” in Proceedings of the 36th international conference on software engineering, 2014, pp. 767– 778.
[18] E. Guzman, M. Ibrahim, and M. Glinz, “A little bird told me: Mining tweets for requirements and software evolution,” 09 2017.

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Current Progress

- DataSet
- Experiments and Results

Current Progress : DataSet

- Dataset was published by Maleej at el [1] during their research called “On the automatic classification of app reviews”
- Contains 4400 reviews extracted from both Google Store and Apple Store.
- Dataset is labels into four classes(“Bug”,”Feature”,”Rating”,”UserExperience”).

[1] W. Maalej, Z. Kurtanović, H. Nabil, and C. Stanik, “On the automatic classification of app reviews,” Requirements Engineering, vol. 21, 09 2016.

Current Progress : DataSet


```
{
  "comment": "watdupp\tnt bad",
  "rating": 5,
  "past": 1,
  "stopwords_removal": "watdupp nt bad",
  "reviewer": null,
  "id": 2059,
  "stemmed": "watdup nt bad",
  "fee": null,
  "title": "",
  "label": "Rating",
  "future": 0,
  "lemmatized_comment": "watdupp nt bad",
  "sentiScore": -2,
  "sentiScore_neg": -2,
  "reviewId": 149033,
  "stopwords_removal_nltk": "watdupp nt bad",
  "present_simple": 0,
  "dataSource": "RE2014_app_and_play_store_apps",
  "appId": null,
  "date": null,
  "sentiScore_pos": 1,
  "present_con": 0,
  "length_words": 3,
  "stopwords_removal_lemmatization": "watdupp nt bad",
  "Exclude": "\u0000"
},
```

Current Progress : Experiments and Results

Model	Pre -processing	Word Embedding	Test Score	Test Accuracy
CNN	None	Glove	0.8405939340591431	0.6589986681938171
CNN	Lemmatizing	Glove	0.8326842188835144	0.686062216758728
CNN	None	Word2Vec	0.7459031939506531	0.6779431700706482
CNN	Lemmatizing	Word2Vec	0.8751616477966309	0.6238159537315369
CNN	None	Fasttext	0.8594943284988403	0.6359946131706238
CNN	Lemmatizing	Fasttext	0.7926620841026306	**0.6887686252593994**

Current Progress : Experiments and Results

Model	Pre -processing	Word Embedding	Test Score	Test Accuracy
RNN	None	Glove	1.019565224647522	0.6495263576507568
RNN	Lemmatizing	Glove	1.0259424448013306	0.6495263576507568
RNN	None	Word2Vec	1.019760012626648	0.6495263576507568
RNN	Lemmatizing	Word2Vec	1.0184935331344604	0.6495263576507568
RNN	None	Fasttext	1.0179327726364136	0.6495263576507568
RNN	Lemmatizing	Fasttext	1.0147686004638672	0.6495263576507568

Current Progress : Experiments and Results

Model	Pre -processing	Word Embedding	Test Score	Test Accuracy
Bidirectional LSTM	None	Glove	0.7573990225791931	0.6928281188011169
Bidirectional LSTM	Lemmatizing	Glove	0.7312796115875244	0.6765899658203125
Bidirectional LSTM	None	Word2Vec	0.7574238181114197	**0.7023004293441772**
Bidirectional LSTM	Lemmatizing	Word2Vec	0.73124760389328	0.6887686252593994
Bidirectional LSTM	None	Fasttext	0.7468425035476685	0.6820027232170105
Bidirectional LSTM	Lemmatizing	Fasttext	0.7606375217437744	0.686062216758728

Future Directions

[30] J. Verma and A. Patel, “Evaluation of unsupervised learning based extractive text summarization technique for large scale review and feedback data,” Indian Journal of Science and Technology, vol. 10, pp. 1–6, 05 2017.

Future Directions

- Fine Tune Pre-trained word embeddings.
- Multi-input Neural Network Models.

Thank You

Q & A