Mining App Store requirements

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University College London
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Motivation
Traditional Software Repository

SVN
Bugzilla
Git

MSR for App Stores
Source Code | Bugs | Changes | Email | Technical

Traditional Software Repository

SVN | Bugzilla | Git

GCC
App Store Repository
MSR for App Stores

Customer

Ratings

Popularity

Price

App Store Repository
Technical

Features

Ratings

Customer

Popularity

Price

App Store Repository

MSR for App Stores
Blackberry App Store

1. Raw Data
2. Refined Data

3. Database
   - Technical Information
   - Business Information
   - Customer Information

4. Correlation Analysis
   - Metrics

**MSR for App Stores**
MSR for App Stores
MSR for App Stores

1. BlackBerry App Store → Raw Data
2. Raw Data → Refined Data
3. Refined Data → Database
4. Database → Correlation Analysis
   - Technical Information
   - Business Information
   - Customer Information

Correlation Analysis → Metrics

BlackBerry App World → Apps → Finance → Financial Services

**Mortgage Calculator PRO**

- By: DavidNegri
- 59 reviews
- Rated: General
- US$7.99

**Item Information**
- Version: 5.6.2
- Release: May 14, 2012
- File Size: 445 KB
- Support: support@dpsoftware.org

**Item Description**

(One time buy, no subscription, free upgrade only.)

Why is it important to have a mortgage calculator on the go?

Mortgage Calculator Pro is a quick and easy to use calculator for brokers, realtors, and home buyers.

When shopping for a house, comparing mortgage brokers, comparing properties, and looking over the numbers with your significant other, the most important thing to know is how much it is going to cost you. By knowing this information, it can help you to make important decisions while you are on the go.
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When choosing a house, make sure you can afford the property easily. This mortgage calculator is also quick and easy to use. All you need to do is enter the loan amount, the interest rate, and the amortization. After this is complete, the calculator will calculate your payments. The home mortgage refinance calculator helps you assess the impact of mortgage refinancing. Enter your current loan information as well as the proposed refinance loan information to calculate the break-even point and potential cost savings from refinancing your mortgage.

Mortgage Calculator PRO is a professional suite and it can be used for either loans, mortgages and mortgage refinancing.

Brief description:
# Mortgage loan payments calculator with full amortization schedule, interest calculator, mortgage refinancing, mortgage comparison, affordability calculator, rent vs buy, tax, insurance and much more.
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The home mortgage refinance calculator helps you assess the impact of mortgage refinancing. Enter your current loan information as well as the proposed refinance loan information to calculate the break-even point and potential cost savings from refinancing your mortgage.

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# Mortgage loan payments calculator with full amortization schedule, interest calculator, mortgage refinancing, mortgage comparison, affordability calculator, rent vs buy, tax, insurance and much more.
Extracting features from description of apps

A **feature** to be a property, captured by a set of words in the app description and shared by a set of apps.
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A **feature** to be a property, captured by a set of words in the app description and shared by a set of apps.

- setup, bank, accounts
- calculate, monthly, expenses
- e-mail, alerts, stock
- create, watch, lists
- financial, business, news

e.g. Finance
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A feature to be a property, captured by a set of words in the app description and shared by a set of apps.

- setup, bank, accounts
- calculate, monthly, expenses
- e-mail, alerts, stock
- create, watch, lists
- financial, business, news

- free, wifi
- wifi, hotspot, near
- download, offline, use
- restaurants, plotted, map
- bus, service

e.g. Finance

e.g. Travel
**Algorithm 1 Feature Extraction Algorithm**

```python
Require: apps
rawFeatures = []
featureLets = []
for all apps do
    if featurePattern exists in currentApp.description then
        rawFeatures.append (extractFeaturePattern (currentApp))
    end if
end for
for all rawFeatures do
    refineRawFeatures (currentRawFeature)
end for
featureLets = findTrianGramCollocation (refineRawFeatures) \{NLTK\}
features = getGreedyClusters (featureLets)
return features
```

**Item Description**

(One time buy, no subscription, free upgrade only.)

Why is it important to have a mortgage calculator on the go?

Mortgage Calculator Pro is a quick and easy to use calculator.

When shopping for a house, comparing mortgage brokers with your significant other, the most important thing to know is:

By knowing this information, it can help you to make important decisions.

When choosing a house, make sure you can afford the payment.

This mortgage calculator is also quick and easy to use. All you need to know is the current mortgage rate, and the amortization. After this is complete, the calculator will show you your payment.

The home mortgage refinance calculator helps you assess your current mortgage as well as the proposed refinance loan in order to determine potential cost savings from refinancing your mortgage.

Mortgage Calculator PRO is a professional suite and it can help you with mortgage refinancing.

Brief description:

# Mortgage loan payments calculator with full amortization schedule.
# Mortgage comparison, affordability calculator, rent vs buy.
# Bar chart and pie chart support.
# Send your results via Email/SMS or export it in Excel or Word.
# Extremely powerful but easy to use.
# Support for different currencies and different compounding periods, US mortgages, Canadian mortgages and other international mortgages.

# English, Français, Deutsch, Español, Italiano.
MSR for App Stores

1. Blackberry App Store → Raw Data
2. Raw Data → Refined Data
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4. Database → Correlation Analysis → Metrics

App

Features

...
MSR for App Stores
E.g. cost for features

MSR for App Stores
E.g. cost for features

\[ C(\text{[Technical Information]}) + C(\text{[Business Information]}) + C(\text{[Customer Information]}) \]

\[ 3 \]
E.g. cost for features

\[ C(\text{Technical Information}) + C(\text{Business Information}) + C(\text{Customer Information}) \]

3

\[ F(f, d) = \sum_{a_i \in S(f, d)} A(a_i, d) \]

\[ \frac{\#(S(f, d))}{\#(S(f, d))} \]
Do higher rated apps get more downloads?
Do higher rated apps get more downloads?

<table>
<thead>
<tr>
<th></th>
<th>Apps</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman rank correlations (Ratings, Rank of Downloads)</td>
<td>0.79</td>
<td>0.89</td>
</tr>
</tbody>
</table>
What’s the chance of producing a similar feature correlation purely at random?
What’s the chance of producing a similar feature correlation purely at random?
What’s the chance of producing a similar feature correlation purely at random?
How price sensitive are customers?
How price sensitive are customers?

Spearman rank correlations
(Price, Rank of Downloads)

<table>
<thead>
<tr>
<th></th>
<th>Apps</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman</td>
<td>0.12</td>
<td>-0.09</td>
</tr>
</tbody>
</table>
Which feature shall I include in a travel app?
Current work

Predictive Models for App prices
Conclusion

App Store: a new form of software repository

Rich source of information

http://www.cs.ucl.ac.uk/staff/Y.Jia/projects/app_store_mining