

An Innovative Approach to Develop Persona from Application Reviews

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Abstract

- Software end users are diverse by nature.
- End user characteristics, expectations and frustrations are depicted with persona.
- Engagement with end users is needed during the requirement engineering phase to gain understanding.
- Often user research during the requirement engineering phase can be very challenging.
- We propose an innovative approach to develop user personas from app reviews.
- We apply GPT-3 and PATHY technique.
- The proposed approach will be beneficial for developers to understand their end users and their needs.

Introduction

Most software provide an inadequate user experience due to the developers' lack of understanding of end user characteristics and needs.

However, the end user characteristics, as well as their preferences, keep changing and software needs to take these into account throughout the development as well as after deployment.

Understanding end users through rigorous research, is time, cost and effort-consuming.

To address these challenges, we propose an innovative approach to understanding the end user of software from an alternative source of information – application (app) reviews provided by the end users, themselves.

We develop **persona** of end users of e-commerce from their app reviews.

A persona is a description of a fictional character who will use the software. Persona is usually developed from user research before commencing the development.

Persona helps software developers understand the end users characteristics and needs.

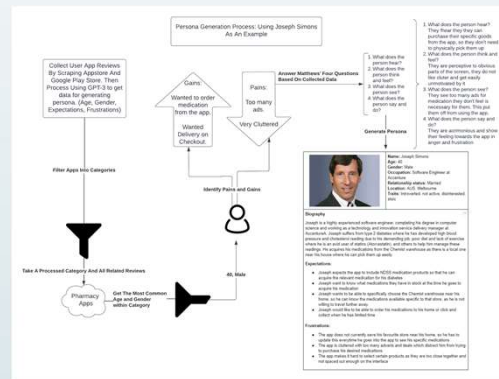
Methodology

Development environment

- Python Script to extract app reviews from 25 different e-commerce applications across eight categories
- The OpenAI python API to communicate with GPT-3 to extract information from app reviews
- NLTK to process qualitative responses provided by GPT-3

Facet extraction

- "textdavinci-2" algorithm to execute GPT-3
- Temperature set to 0 (entirely deterministic results)



Persona development

- PATHY technique
 - What does the person hear?
 - What does the person think and feel?
 - What does the person see?
 - What does the person say and do?
- Most common age and gender within each e-commerce category added to the persona
- The pains and gains of said persona from the most common expectation and frustrations in the reviews
- Answer the four questions to contribute to persona biography and characteristics

Results

- Total 4931 reviews were analysed.

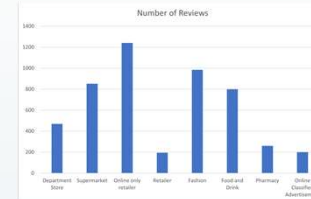


Figure 2: Number of reviews per category

- Total of eight persona were developed.

Name: Joseph Simons
Age: 40
Gender: Male
Occupation: Software Engineer at Accenture
Relationship status: Married
Location: AUS, Melbourne
Traits: Introverted, not active, disinterested, stoic

Biography
Joseph is a highly experienced software engineer, completing his degree in computer science and working as a technology and innovation service delivery manager at Accenture. Joseph suffers from type 2 diabetes where he has developed high blood pressure and cholesterol reading due to his demanding job, poor diet and lack of exercise where he is an avid user of statins (Atorvastatin), and others to help him manage these readings. He acquires his medications from the Chemist warehouse as there is a local one near his house where he can pick them up easily.

Expectations:

- Joseph expects the app to include NDSS medication products so that he can acquire the relevant medication for his diabetes
- Joseph wants to know what medications they have in stock at that store, as he is not willing to travel further away.
- Joseph would like to be able to order his medications to his home or click and collect when he has limited time

Frustrations:

- The app does not currently save his favourite store near his home, so he has to update this everytime he goes into the app to see his specific medications
- The app is cluttered with too many adverts and deals which distract him from trying to purchase his desired medications
- The app makes it hard to select certain products as they are too close together and not spaced out enough on the interface

Figure 3: A user persona of Joseph

Name: Makaylah Martin
Age: 35
Gender: Female
Occupation: Unemployed
Relationship Status: Married
Location: Casuarina, Darwin, Australia
Traits: Suzy Homemaker, Organised, People Pleaser, Creative

Biography
Makaylah considers herself as a Suzy Homemaker and while she is unemployed, she considers herself to be an expert interior designer. When she is not hosting dinner parties, she is constantly looking for ways to improve the feng shui of her home. She is always on the lookout for a deal and considers it a waste of money if she doesn't capitalise on one.

Expectations:

- Instagram posts to show me cool new items or ideas
- Deals and promotions clearly shown and promoted
- Promote items based on previously shipped
- Able to filter products to find the best fit for a broad item that was searched

Frustrations:

- No quick buy option, thus preventing impulse buying
- Customer service being too slow to assist
- Long delivery times with no way of tracking

Figure 4: A user persona of Makaylah

Conclusion

Evaluation

- Already proven - age, gender and sentiment could be determined from the short-form text.
- Manual extraction of 100 sampled app reviews showed 87% similarity with GPT-3.
- Quality of reviews is assessed with information power – five criteria: study aim, sample specificity, use of established theory, quality of dialogue, and analysis strategy.

Limitations

- Biases due to GPT-3 being trained on only public internet data
- Exclusion of non-English reviews

Implication for Development

- Developers of existing platforms can gain a better understanding of their end users without involving them directly.
- Developers of new platforms can understand the diverse end users and their requirements.

Implication for research

- Initial results with GPT-3 are promising, customized Machine Learning Algorithm can be developed for the purpose.
- App reviews are an excellent source of information, these can be used on a regular basis to understand the end users.

Future research directions

- Apply to a bigger sample
- Multiple domains
- Different ways of persona development

Acknowledgements

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