Qualitative Technology Acceptance Evaluation of JIRA in Software Development Using Machine Learning

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Abstract

- Software testing is a systematic process of evaluating and verifying that a software application or system meets specified requirements and functions correctly.
- This research paper evaluates an existing bug tracking tool in qualitative approach.
- This study uses qualitative approach in understanding the acceptability of a technology within organization.

INTRODUCTION

- Software development relies on rigorous testing to ensure product quality.
- Effective bug tracking tools are essential for identifying and managing software issues.
- JIRA, developed by Atlassian, is a prominent bug tracking tool in the software development industry.
- This study combines qualitative analysis with machine learning techniques to assess the acceptance of JIRA in software development.

JIRA

- Jira is a popular project management and issue tracking tool developed by Atlassian. It is widely used by software development teams and various other teams across different industries to plan, track, and manage projects, tasks, and issues

- Its flexibility and extensive feature set have made it a go-to choice for organizations across various industries seeking to streamline their project management and issue tracking processes.

Features

- **Issue Tracking :**

  Tracks issues ,Issues can represent anything from software bugs and new feature requests to general tasks and project activities.

- **Agile Capabilities:**

  Jira supports Agile project management methodologies, including Scrum and Kanban.

- **Custom Workflows:**

  Teams can design workflows tailored to their specific processes and requirements.

Methodology

- **Building corpus:** Compiled responses from 1000 software engineers, treating each response as a document in corpus.
- **Data cleaning:** Conducted data cleaning to remove symbols, special characters, and words with fewer than 4 characters, ensuring data quality.
- **Bi-term topic modeling:** Employed Bi-term Topic Modeling (BTM) to uncover recurring themes in the responses.

Methodology

- **Open coding:**
  Open coding was employed to gain deeper insights into the BTM and Word2Vec results.
- **Word2Vec :**
  Word2Vec was utilized to generate word embeddings, enhancing our understanding of key terms

Applications

- **Software Development:** Jira is widely used in software development teams to manage tasks, track software bugs.
- **Project Management:**Teams can create customized workflows and dashboards to suit their project requirements.
- **IT Operations:** IT teams use Jira for IT service management (ITSM) and incident tracking

Test

- To evaluate the result of topic modeling intrusion test was performed using human evaluators.
- A word was removed from the topic model and an intruder word, randomly selected from the words not part of the topic model, was added. This was repeated with different words being removed and added. This test evaluates the cohesion of the group of words belonging to the same topic in the topic model

Analysis

- Based on the result,It was concluded that JIRA is not only a bug monitoring tool, it is commonly used now as project management tool.
- In the topic models, Customizability, repository connectivity and report generation are important features of JIRA for the respondents.

Conclusion

- JIRA has evolved from being a bug tracking tool to a versatile project management solution.
- User experience, project management capabilities, customizability, and repository connectivity are paramount for users.
- Qualitative data provides valuable insights into technology acceptance within organizations.

References

- **Paper :** Paper link
- **Title :** Qualitative Technology Acceptance Evaluation of JIRA in Software Development Using Machine Learning
- **Subtitle:** A Study by Ken Gorro, Kim Gorro, Anthony Ilano, Archival Sebial, Elmo Ranolo, Edita Vale
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THANK YOU