# FeRec: Automatic Features Recommendation Model to support Bug Reporting

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## ABSTRACT

Bug reports are the primary means through which developers triage and fix bugs. To achieve this effectively, bug reports need to clearly describe those features that are important for the developers. However, previous studies have found that reporters do not always provide such features. Therefore, we first perform an exploratory study to identify the key features that reporters frequently miss in their initial bug report submissions. Then, we plan to propose an automatic approach for supporting reporters to make a good bug report. For our initial studies, we manually examine bug reports of five large-scale projects from two ecosystems such as Apache (Camel, Derby, and Wicket) and Mozilla (Firefox and Thunderbird). As initial results, we identify five key features that reporters often miss in their initial bug reports and developers require them for fixing bugs. We build and evaluate classification models using four different text-classification techniques. The evaluation results show that our models can effectively predict the key features. Our ongoing research focuses on developing an automatic features recommendation model to improve the contents of bug reports.

## CCS CONCEPTS

• **Software and its engineering → Software Bug Report Analysis**.

## KEYWORDS

Bug Report, High-Impact Bug (HIB), Open-Source Projects, Prediction Models

## 1 INTRODUCTION

Bug reports are the primary means through which developers triage and fix bugs [1]. To achieve this effectively, bug reports need to clearly describe those features that are important for the developers.

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## 2 BACKGROUND AND MOTIVATION

Bug reports are the primary means through which developers triage and fix bugs. To achieve this effectively, bug reports need to clearly describe those features that are important for the developers. However, previous studies have found that reporters do not always provide such features. Therefore, we first perform an exploratory study to identify the key features that reporters frequently miss in their initial bug report submissions. Then, we plan to propose an automatic approach for supporting reporters to make a good bug report. For our initial studies, we manually examine bug reports of five large-scale projects from two ecosystems such as Apache (Camel, Derby, and Wicket) and Mozilla (Firefox and Thunderbird). As initial results, we identify five key features that reporters often miss in their initial bug reports and developers require them for fixing bugs. We build and evaluate classification models using four different text-classification techniques. The evaluation results show that our models can effectively predict the key features. Our ongoing research focuses on developing an automatic features recommendation model to improve the contents of bug reports.

## 3 APPROACH

Bug reports are the primary means through which developers triage and fix bugs. To achieve this effectively, bug reports need to clearly describe those features that are important for the developers. However, previous studies have found that reporters do not always provide such features. Therefore, we first perform an exploratory study to identify the key features that reporters frequently miss in their initial bug report submissions. Then, we plan to propose an automatic approach for supporting reporters to make a good bug report. For our initial studies, we manually examine bug reports of five large-scale projects from two ecosystems such as Apache

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## 4 EVALUATION AND FUTURE WORK

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## 5 CONCLUSION

Bug reports are the primary means through which developers triage and fix bugs. To achieve this effectively, bug reports need to clearly describe those features that are important for the developers. However, previous studies have found that reporters do not always provide such features. Therefore, we first perform an exploratory study to identify the key features that reporters frequently miss in their initial bug report submissions. Then, we plan to propose an automatic approach for supporting reporters to make a good bug report. For our initial studies, we manually examine bug reports of five large-scale projects from two ecosystems such as Apache (Camel, Derby, and Wicket) and Mozilla (Firefox and Thunderbird). As initial results, we identify five key features that reporters often miss in their initial bug reports and developers require them for fixing bugs. We build and evaluate classification models using four different text-classification techniques. The evaluation results show that our models can effectively predict the key features. Our ongoing research focuses on developing an automatic features recommendation model to improve the contents of bug reports.

## 6 ACKNOWLEDGMENTS

## REFERENCES

[1] Nicolas Bettenburg, Rahul Premraj, Thomas Zimmermann, and Sunghun Kim. 2008. Extracting Structural Information from Bug Reports. In *2008 International Working Conference on Mining Software Repositories (MSR '08)*.