Extended Abstract of A Comparative Study and Analysis of Developer Communications on Slack and Gitter

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I. EXTENDED ABSTRACT

Software developers are often using instant messaging platforms to communicate with each other and other stakeholders. Among these platforms, Gitter has emerged as a popular choice and the messages it contains can reveal important information to researchers studying open-source software systems. Uncovering what developers are communicating about through Gitter is an essential first step towards successfully understanding and leveraging this information. This paper builds upon our previously published paper (Parra et al. 2020), which introduced GitterCom for the first time and presented a study of the messages it contains with the goal of observing how developers and other stakeholders communicate about software using Gitter in the context of Gitter communities dedicated to the active development of open-source software systems on GitHub.

In this paper, we aim to understand whether the categories that Lin et al. (2016) found on Slack through surveys are applicable for messaging data on Gitter, and if so, how prevalent each category is in the two data sources. For this purpose, we compare and contrast the self-reported usage of chat-based communication platforms by developers based on survey responses, as reported by Lin et al. (2016) with the actual usage of these platforms, as revealed by analyzing the messages from Gitter. This study sheds light on the similarities and differences between the developers’ perceived usage and their actual usage of instant messaging platforms like Slack and Gitter. Moreover, we also provide an analysis of message intents across different development communities.

Further, in an effort to automate the labeling process, we evaluate the use of 9 traditional machine learning and deep learning algorithms for the automatic classification of Gitter developer messages by their intent. Given the continuously increasing amount of data being generated and the time-consuming nature of manual labeling involved in creating this type of dataset, our goal is to facilitate future data collection by automating the classification of messages. Our results show that Decision Trees and Random Forest perform the best, achieving an accuracy of 88%, which is very promising for this multi-class classification task. Finally, we discuss the potential directions for future research enabled by labeled Gitter datasets such as GitterCom.

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