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Bots – Non-human Members of the Wikipedia Community

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In the Wikipedia community besides to the regular users, registered non-human users – software algorithms called bots – help editing the articles. Although these bots are supervised by human users, they generally operate autonomously. In most current studies on Wikipedia, bots are not considered as a separate issue or their importance is regarded as negligible. Given that currently more than 15 % of the edits in the German Wikipedia are done by bots, we question if this marginalisation is appropriate.

In the study at hand we analyse the editing behaviour of bots using meta data of edits in the German Wikipedia which we could access via the Wikimedia Toolserver by courtesy of the Wikimedia Foundation. We found that there are not much more than hundred bots which have been active recently – which constitutes a minority of only about 0.2 % of all active users. However, this comparably small share contributes more than 15 % of the total number of edits. While the general trend indicates stagnation in the contribution of registered regular users and a decline in the contribution of unregistered users, the number of edits made by bots is still increasing.

Due to their ability to operate automatically, the number of edits per user is naturally much higher for bots than for regular users. However, their edits are neither very large regarding the length of the edit nor rich of content, as bots are not able to autonomously contribute new passages of text. By manually analysing all recently active bots we extracted nine types of edits bots typically make, including those linking different language versions of Wikipedia (interwiki links), doing administrative work not visible in the articles or correcting broken links. Indeed the majority of bots is solely concerned with interwiki links. These edits make up 67 % of the total number of edits made by bots. Altogether, edits made by bots seem to be rather insignificant with respect to the content of the articles.

However, regarding the bots' interactions with human users, their impact is far more interesting. Using the example of a bot pointing out problems with the declaration of images we mean to show how edits by bots entail edits by human users and vice versa in a chain of edits in one article. We call this phenomenon a chain of hybrid interaction. The term "hybrid", as it is meant here, contains the idea that a common action is distributed to several human and non-human actors who are trying to solve a common problem. In a second example of a bot which finds new interwiki links by crowd sourcing we intend to show that bots can even be designed to operate in a hybrid constellation.

Besides to our analysis of bot activities in the Wikipedia we also try to answer the question whether Wikipedia is based on the 'wisdom of crowds', a thesis by James Surowiecki, or rather on the 'wisdom' of few very active users. The current discourse provides support for both opinions. We consider the growing influence of bots and the empirically observable decline in the proportion of unregistered users as indications supporting the latter thesis. Finally, we aim to analyse how equally edits are distributed to the users using Lorenz curves and the Gini coefficient. Like other authors before, we find that very few users contribute very much while many users only contribute little to the Wikipedia. Overall we see strong evidence against the 'wisdom of crowds' thesis. If this imbalance is confirmed by other researches, the Wikipedia community might have to reflect if a growing inequality of contributions is still in accordance with the original philosophy of Wikipedia.