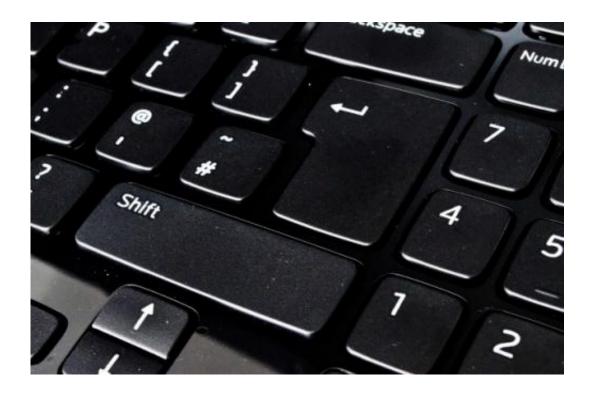# Women accepted as better coders as long as no gender link

February 13 2016, by Nancy Owano

Credit: George Hodan/Public Domain

Wow, gender bias has appearances of residing in computer programming—off the charts, so to speak, but accorded serious attention in a new study. The findings come from scientists at California Polytechnic State University and North Carolina State University.

"While our big data study does not definitely prove that differences

between gendered interactions are caused by bias among individuals, the trends observed in this paper are troubling. The frequent refrain that open source is a pure meritocracy must be reexamined," the researchers stated.

They worked with publicly available information on about 4 million GitHub users logged in to the service on April 1 last year. No joke.

They used a gender-linking technique to identify the gender of just over 35 percent of the users, around 1.4 million, said *MIT Technology Review*.

So what exactly was this gender-linking technique? The BBC said the numbers they were able to identify were from user profiles or because their email addresses could be matched with the Google + social network. "The researchers accepted that this was a privacy risk but said they did not intend to publish the raw data."

Explained further in *MIT Technology Review:* "An analysis of pull requests, or users' submissions of new code to the projects of other software developers, revealed that code written by women was accepted 78.6 percent of the time. For men, the figure was 74.6 percent. But when female coders did indicate their gender, they were far less likely to have their code accepted, with their approval rate plummeting to 62.5 percent."

BBC summarized the research: "Computer code written by women has a higher approval rating than that written by men - but only if their gender is not identifiable."

According to the study authors, "gender bias pervades open source." They wrote that "our results show that women's contributions tend to be accepted more often than men's. However, when a woman's gender is identifiable, they are rejected more often. Our results suggest that

although women on GitHub may be more competent overall, bias against them exists nonetheless."

The paper defined pull requests as "proposed changes to a software project's code, documentation, or other resources."

Actually, the paper made a number of observations in addition to the fact that women were more likely to have pull requests accepted than men were. Among other findings: women's pull requests were less likely to serve an immediate project need; changes were larger; and acceptance rates were higher across programming languages.

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The paper is awaiting peer review, said the BBC, and it remains to be seen how other experts will appraise the results.

  More information: Gender Bias in Open Source: Pull Request Acceptance of Women Versus Men (PDF): peerj.com/preprints/1733.pdf

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