Who Gets a Patch Accepted First?
Comparing the Contributions of Employees and Volunteers
Motivation

On the challenges of open-sourcing proprietary software projects

Gustavo Pinto¹ · Igor Steinmacher² · Luiz Felipe Dias² · Marco Gerosa³

Apple Swift:
- 445K lines of code
- 576 developers
- 20,000+ stars in 3 weeks
- 15,500+ pull-requests after open-sourcing (Dec-2015)
Goal

Investigate the differences on the acceptance of patches submitted by volunteers and employees to company-owned OSS projects
RQs

RQ1: Do volunteers have to try more than employees to have a patch accepted?

RQ2: Do volunteers have to wait much more than employees to have a patch processed?

RQ3: Do volunteers follow contributing best practices?
Method

1. Mining repositories
   - GitHub API
   - Mining Script
   - Pull-requests

2. Defining contributors
   - Flag: site_admin
   - True
   - False
   - Employee
   - Volunteer

3. Analyzing pull-requests
   - Number of commits
   - Number of changes
   - Commit message
   - Time taken to process
RQ1: Do volunteers have to try more than employees to have a patch accepted?

Volunteers face $26\times$ more rejections than employees.

Average of patches rejected and accepted per contributor:

**Employees:**
- Rejected: 5.78
- Accepted: 39

**Volunteers:**
- Rejected: 1.42
- Accepted: 2.3
RQ2: Do volunteers have to wait much more than employees to have a patch processed?

Volunteers have to wait, on average, 11 days to have a patch processed.
RQ3: Do volunteers follow contributing best practices?

BP1: Contribution should be small

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RQ3: Do volunteers follow contributing best practices?

BP2: The contribution should be accompanied with tests

BP3: The commit message should be descriptive
Conclusions

- Volunteers face more rejections than employees.
- Few employees are responsible for the majority of the software development.
- Volunteers have to wait, on average, 11 days to have a patch processed (employees wait 2 days)
- 92% of the dormant pull-requests were submitted by employees.
- Best practices are not systematically followed
  - The practice that had the most adherence is commit messages written in English