

Github Actions vs Gitlab CI

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1 Introduction

Continuous Integration systems are widely used but the features the support are diverse. This paper compares two continuous integration systems: Github Actions¹ and Gitlab CI.² To achieve real world comparisons a single project is used and the same solution is implemented using both systems.

2 Configuration Syntax

Each of the systems has a different syntax for configuring the steps to perform. Both use YAML but the structure is different. In this example a LaTeX document will be built and the artifact stored so it is available online.

A first (naive) attempt at building a LaTeX document with Github Actions involved several steps (Figure 2)^{3,4}. Using the Ubuntu 18.04 image, first the Git repo had to be checked out. Since this is a generic image, the necessary LaTeX packages had to be installed. Make is run which runs pdflatex to build the docs. And finally, the upload-artifact action is run to save the doc.

Building a LaTeX document with Gitlab CI is much simpler (Figure 2)^{5,6}. The main reason for this simplification was the use of a Docker image which is setup for building LaTeX documents. The image was found in Gitlab by simply looking through their CI templates. Gitlab provides a wide assortment of templates with Docker images ready to build practically anything.

Could the Github Actions implementation be simplified by using the Docker image that Gitlab CI is using?

¹ *GitHub Actions Documentation*. [Online; accessed 30-April-2020]. URL: <https://help.github.com/en/actions>.

² *GitLab CI/CD Documentation*. [Online; accessed 30-April-2020]. URL: <https://docs.gitlab.com/ee/ci/>.

³ *gitlab.com/jmmahler/resume build.yml*. [Online; accessed 30-April-2020]. URL: <https://github.com/jmahler/resume/blob/master/.github/workflows/build.yml>.

⁴ *GitHub resume build job 91697435*. [Online; accessed 30-April-2020]. URL: <https://github.com/jmahler/resume/actions/runs/91697435>.

⁵ *gitlab.com/jmmahler/resume gitlab-ci.yml*. [Online; accessed 30-April-2020]. URL: <https://gitlab.com/jmmahler/resume/-/blob/master/.gitlab-ci.yml>.

⁶ *GitLab resume build job 533777462*. [Online; accessed 30-April-2020]. URL: <https://gitlab.com/jmmahler/resume/-/jobs/533777462>.

```

1 # .github/workflows/build.yml
2
3 name: Build
4 on: [push, pull_request]
5
6 jobs:
7   build:
8     name: Build
9     runs-on: ubuntu-18.04
10    steps:
11      - name: Checkout
12        uses: actions/checkout@v2
13      - name: Install LaTeX
14        run: |
15          sudo apt install texlive-latex-base
16      - name: Make Doc
17        run: |
18          make
19      - name: Upload PDFs
20        uses: actions/upload-artifact@v2
21        with:
22          name: linux-packaging
23          path: linux-packaging.pdf

```

Figure 1: Build of a LaTeX doc using Github Actions.

```

1 # gitlab-ci.yml
2
3 image: blang/latex
4
5 build:
6   script:
7     - make
8   artifacts:
9     paths:
10      - "*.pdf"

```

Figure 2: Build of a LaTeX doc using Github Actions.

References

- GitHub Actions Documentation*. [Online; accessed 30-April-2020]. URL: <https://help.github.com/en/actions>.
- GitHub resume build job 91697435*. [Online; accessed 30-April-2020]. URL: <https://github.com/jmahler/resume/actions/runs/91697435>.
- GitLab CI/CD Documentation*. [Online; accessed 30-April-2020]. URL: <https://docs.gitlab.com/ee/ci/>.
- GitLab resume build job 533777462*. [Online; accessed 30-April-2020]. URL: <https://gitlab.com/jmmahler/resume/-/jobs/533777462>.
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- gitlab.com/jmmahler/resume gitlab-ci.yml*. [Online; accessed 30-April-2020]. URL: <https://gitlab.com/jmmahler/resume/-/blob/master/.gitlab-ci.yml>.