

Codefair: Make Biomedical Research Software FAIR Without Breaking a Sweat

Bhavesh Patel, Ph.D.
Research Professor



CALIFORNIA MEDICAL
INNOVATIONS INSTITUTE



FAIR DATA
INNOVATIONS HUB

What is FAIR?

The **FAIR (Findable, Accessible, Interoperable, Reusable) Principles** are high-level instructions to make research outcomes reusable

FAIR Principles for Research Software (FAIR4RS Principles):

- F1. Software is assigned a globally unique and persistent identifier.
- F2. Software is described with rich metadata.
- Etc.

<https://doi.org/10.1038/s41597-022-01710-x>

How to Make Research Software FAIR?

The **FAIR Biomedical Research Software (FAIR-BioRS) Guidelines** are minimal, actionable guidelines for making software FAIR

- ❑ Include a license
- ❑ Include codemeta.json and CITATION.cff metadata files
- ❑ Archive each version of your software, e.g. on Zenodo
- ❑ Etc.

<https://doi.org/10.1038/s41597-023-02463-x>

What Are the Challenges?



Lack of awareness/training

- What is FAIR?
- What is a codemeta.json file?
- What is a CITATION.cff file?



Time consuming

For each release, update release date, version number, and authors in

- codemeta.json
- CITATION.cff
- CHANGELOG
- Archival repository metadata

Solution: Codefair



Codefair is a free and open source GitHub app that acts as
your personal assistant for making software FAIR

1

Install codefair from the GitHub marketplace (codefair.io)

2

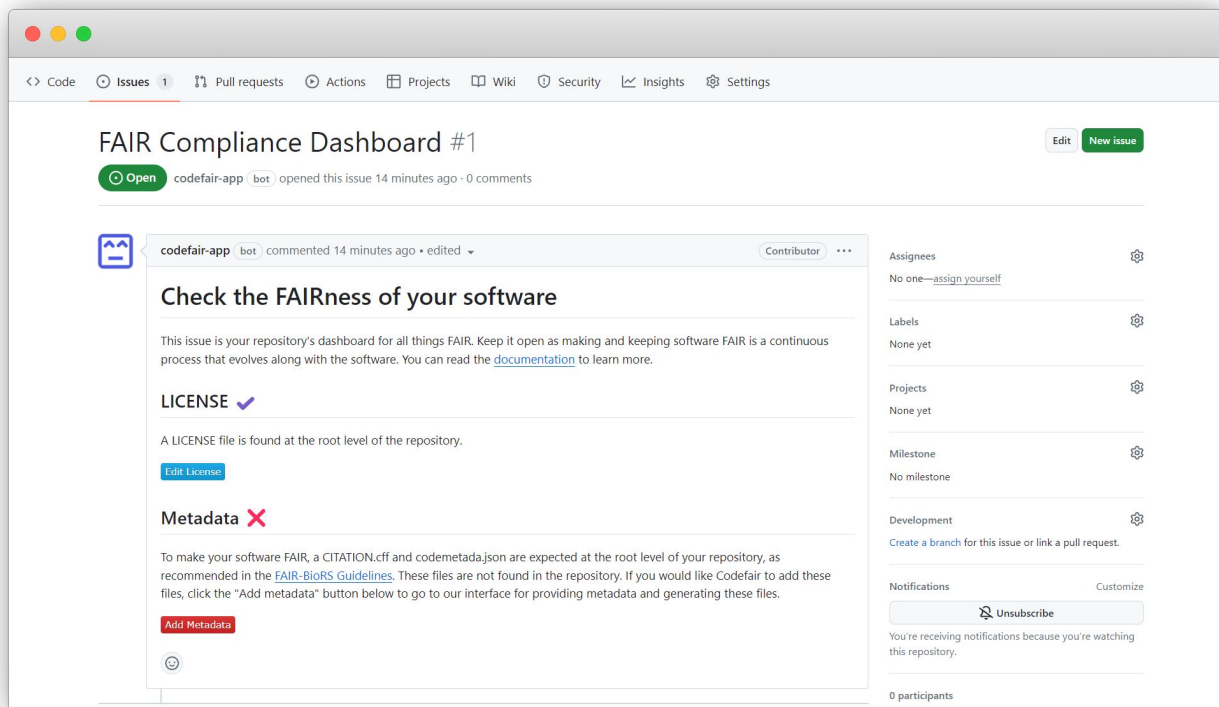
Develop your software as usual from GitHub

3

Track and address FAIR compliance issues through the Codefair GitHub issue

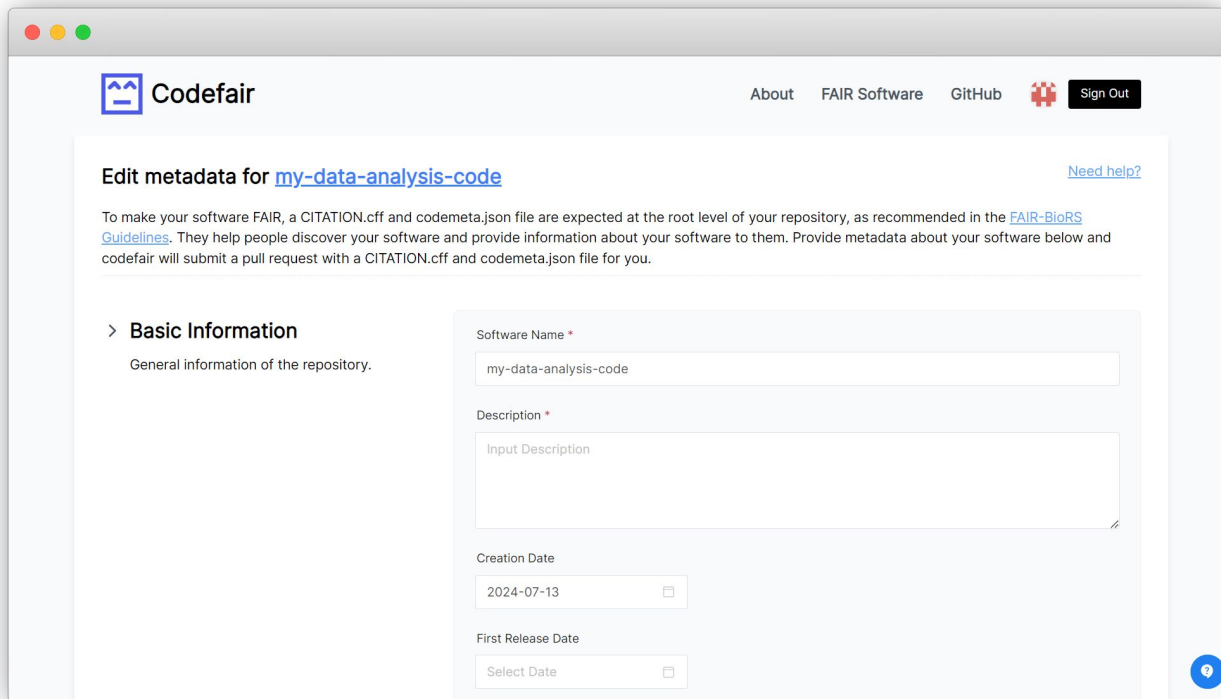
Solution: Codefair

Codefair issue dashboard



Solution: Codefair

Codefair UI



The screenshot shows a web browser window with the Codefair logo and navigation links (About, FAIR Software, GitHub, Sign Out). The main content area is titled "Edit metadata for [my-data-analysis-code](#)" with a "Need help?" link. Below this is a paragraph explaining the purpose of the metadata files. A section titled "Basic Information" is expanded, showing a form with fields for Software Name, Description, Creation Date, and First Release Date.

Codefair About FAIR Software GitHub Sign Out

Edit metadata for [my-data-analysis-code](#) [Need help?](#)

To make your software FAIR, a CITATION.cff and codemeta.json file are expected at the root level of your repository, as recommended in the [FAIR-BioRS Guidelines](#). They help people discover your software and provide information about your software to them. Provide metadata about your software below and codefair will submit a pull request with a CITATION.cff and codemeta.json file for you.

> **Basic Information**
General information of the repository.

Software Name *
my-data-analysis-code

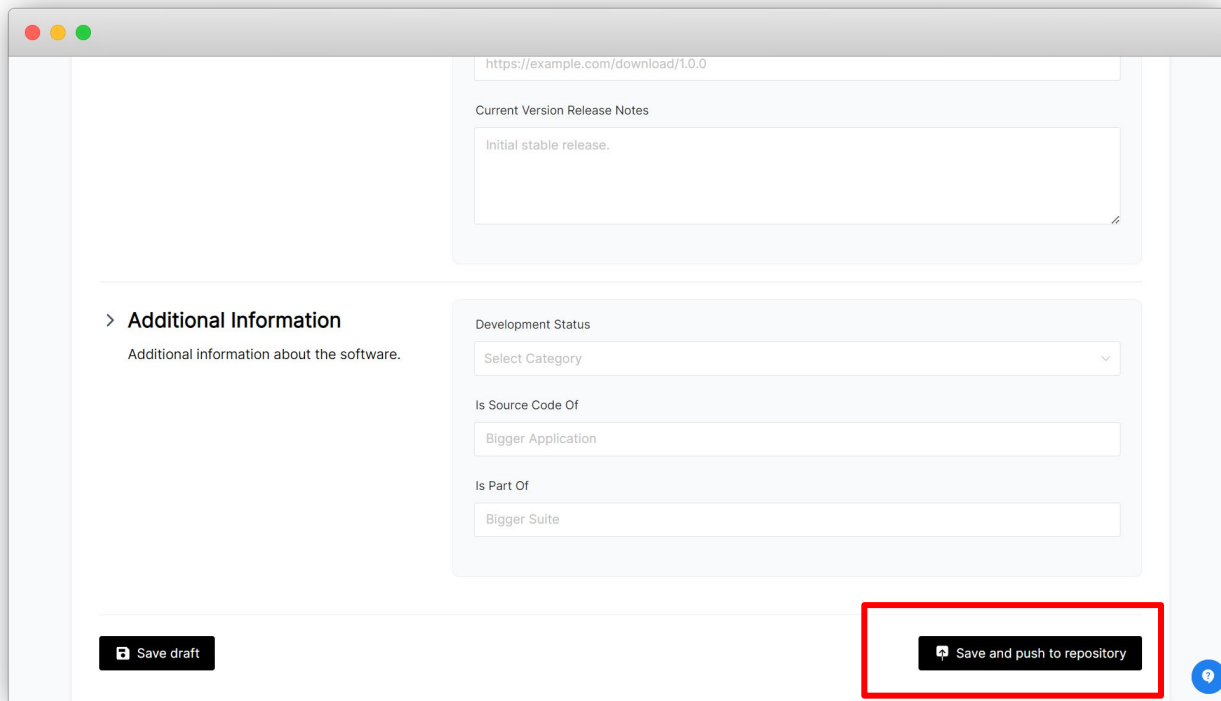
Description *
Input Description

Creation Date
2024-07-13

First Release Date
Select Date

Solution: Codefair

Codefair UI



The image shows a web form for entering software release information. At the top, there is a text input field containing the URL "https://example.com/download/1.0.0". Below this is a section titled "Current Version Release Notes" with a text area containing the text "Initial stable release.". A horizontal line separates this from the "Additional Information" section. This section has a sub-header "> Additional Information" and a description "Additional information about the software.". It contains three form fields: "Development Status" with a dropdown menu showing "Select Category", "Is Source Code Of" with a text input field containing "Bigger Application", and "Is Part Of" with a text input field containing "Bigger Suite". At the bottom of the form, there are two buttons: "Save draft" on the left and "Save and push to repository" on the right. The "Save and push to repository" button is highlighted with a red rectangular border. A blue circular help icon is located in the bottom right corner of the form area.

https://example.com/download/1.0.0

Current Version Release Notes

Initial stable release.

> Additional Information

Additional information about the software.

Development Status

Select Category

Is Source Code Of

Bigger Application

Is Part Of

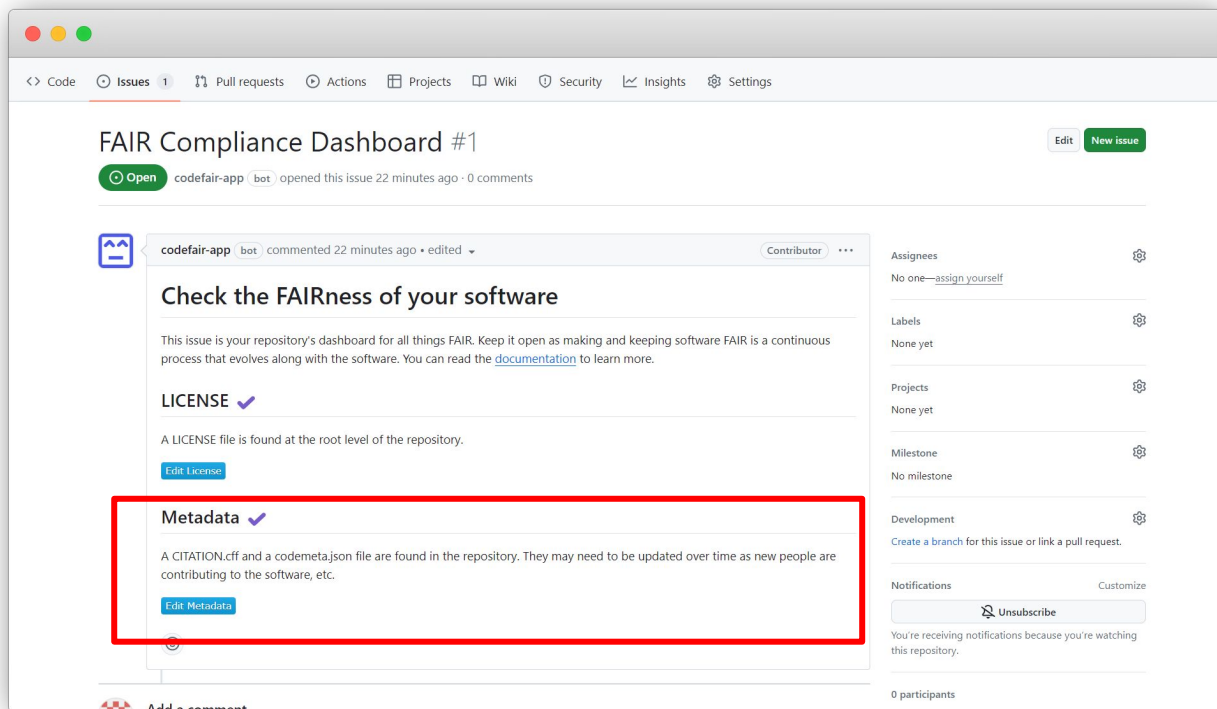
Bigger Suite

Save draft

Save and push to repository

Solution: Codefair

Codefair issue dashboard



Future Work



More features to make software FAIR (code formatting, one-click archival on Zenodo, bio.tools registration, etc.)



Features to support researchers beyond just FAIR (software quality, security, etc.)



Need your support – go to codefair.io and try it out!

Thank You!



codefair.io



bpatel@calmi2.org



fairdataihub.org

*Find these slides and
all resources here*



bit.ly/codefairBOSC