Templating Scientific Research for Reproducibility at Project Inception

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Abstract

blah

"There is a reproducibility crisis in science" is a sentenced guaranteed to illicit a strong response from whomever it is inflicted upon. Regardless of whether such a crisis exists (cite), it is an objective truth that improvements can be made in how science is performed, presented, and reviewed such that other scientists, whether a savant or a neophyte, could reproduce the analysis, generation, and interpretation of your research findings.

All fields of science are becoming more quantitative and, as a consequence, rely on computation in the generation, processing, interpretation, and presentation of data.

As of this writing, I am nearing the end of my PhD and find myself reflecting on what I've learned (it's quite a lot), and more importantly, what I could have done better. Aside from the

A Field-Agnostic Project Architecture

Execution of code

processing

analysis

exploratory

figures

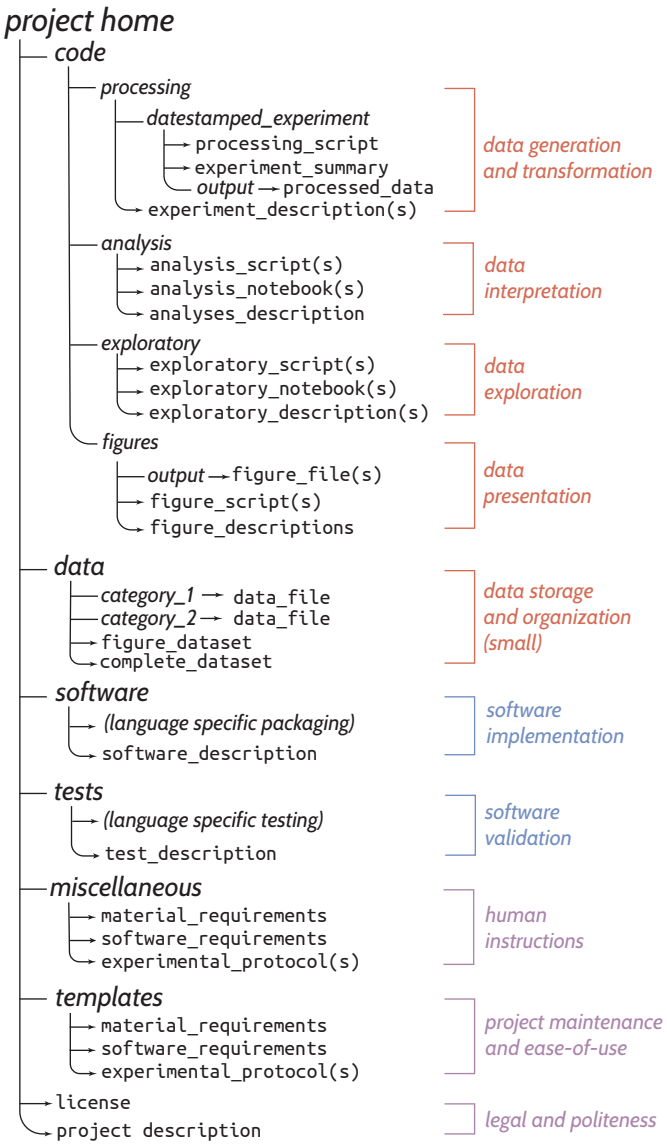

Fig. 1: A template for reproducible scientific research

Storage and organization of (not big) data

Implementation and validation of home-grown software

Making the technical human readable

Making life easy

Protecting your work and staking your claim

Discussion

Separation of human-readable & machine-readable

Separation of execution and definition of code

“It Tolls For Thee”

> ”Perchance he for whom this bell tolls may be so ill, as that he knows not it tolls for him; and perchance I may think myself so much better than I am, as that they who are about me, and see my state, may have caused it to toll for me, and I know not that.

John Donne

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