You Only Write Thrice

Creating Documents, Computational Notebooks and Presentations From a Single Source

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TL;DR

How to automatically generate interactive documents, slides and computational notebooks from a single markdown source.

Abstract

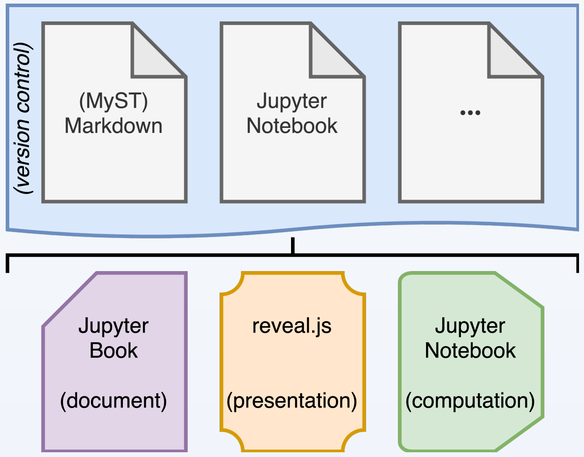
Academic trade requires juggling multiple variants of the same content published in different formats – manuscripts, presentations, posters and computational notebooks. The need to track versions to accommodate for the write–review–rebut–revise life-cycle adds another layer of complexity. We propose to significantly reduce this burden by maintaining a single source document in a version-controlled environment (such as git), adding functionality to generate a collection of output formats popular in academia. To this end, we utilise various open-source tools from the Jupyter scientific computing ecosystem and operationalise selected software engineering concepts. We offer a proof-of-concept workflow that composes Jupyter Book (an online document), Jupyter Notebook (a computational narrative) and reveal.js slides from a single markdown source file. Hosted on GitHub, our approach supports change tracking and versioning, as well as a transparent review process based on the underlying code issue management infrastructure.

Authoring

Multiple Entry Points – Single Source

MyST Markdown →

- **Jupyter Notebook** – computational narrative
  - Google Colab
  - MyBinder
- **Reveal.JS** – interactive slides
- **Jupyter Book** – interactive report/document/book

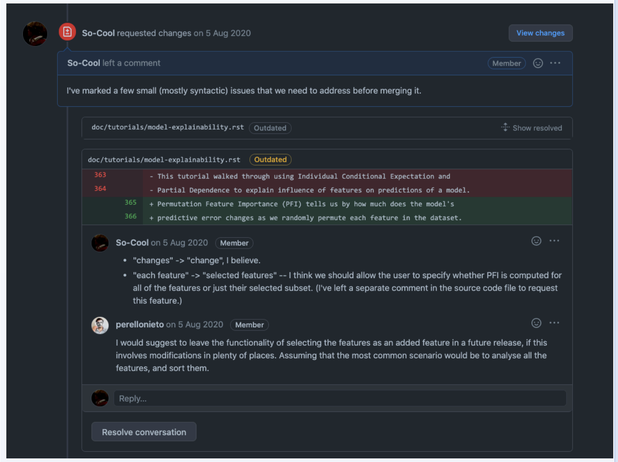


Version-controlled Environment

- Source versioning and history tracking
- E.g., **git** or **mercurial**

Reviewing

- **Akin to source code review**, e.g., through *Issues* and *Pull Requests* infrastructure
- **Permanently attached** to the document source
  - Provenance record
  - Resubmission history
- **Conversational** review with inline comments and discussions



Publishing

- **Tag** a version
- **Release** to an archiving platform
- Bibliometrics
  - **DOI** minting (e.g., Zenodo) to support citations
  - **Google Analytics**-like dissemination tracking

Presenting

- **Three formats**: documents, slides and computational notebooks
- Native **interactivity** support
- Improved **accessibility**
  - Execute directly in the browser – no need to install stuff
  - Support for web-enabled assistive technologies
- **Web technologies** are the limit

Exhibit

Source

https://github.com/so-cool/you-only-write-thrice/

Preview

https://so-cool.github.io/you-only-write-thrice/

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