Reproducible Computational Research with Popper Workflows

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Research in computational fields is too often difficult to replicate, even when code and data are made available. Why?

Obstacles to Reproducibility

- Projects rely on **complex software dependencies** to use statistical or machine learning tools
  - Dependencies break when running the code on another computer
- Data processing involves executing **multiple dependent steps**
  - If not documented, running the code requires guesswork

How Does Popper Help?

- **Containerization** helps manages dependencies while eliminating environment differences
- A **workflow definition language** documents explicitly steps in a workflow so that it can be replicated with a single command

However…

- Popper requires knowledge of many tools (Docker, scripting...)
- This is a steep learning curve for many potential users in computational fields

Popper

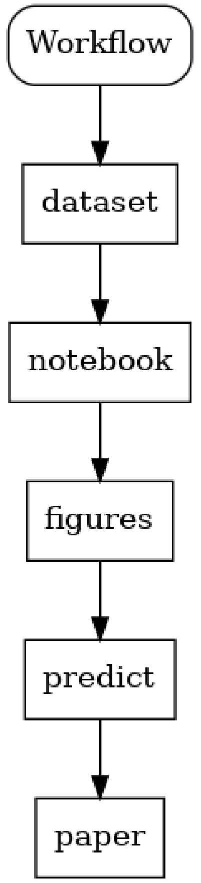
These users would benefit from an easy starting point for adopting the “Popper” approach

Tools to help Python and R users adopt Popper

Workflow Guides

A detailed how-to for common tasks in computational research with Popper

- Managing **software dependencies**
- Running a **computational notebook**
- Using a **easy to** project structure



Cookiecutter Templates

Using the `cookiecutter` utility, templates to **bootstrap** a Popper workflow with sensible defaults and Docker images designed to work well with Popper

Workflow Examples

Sample machine learning workflows in Python and R showcasing **common tasks** and **best practices**

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