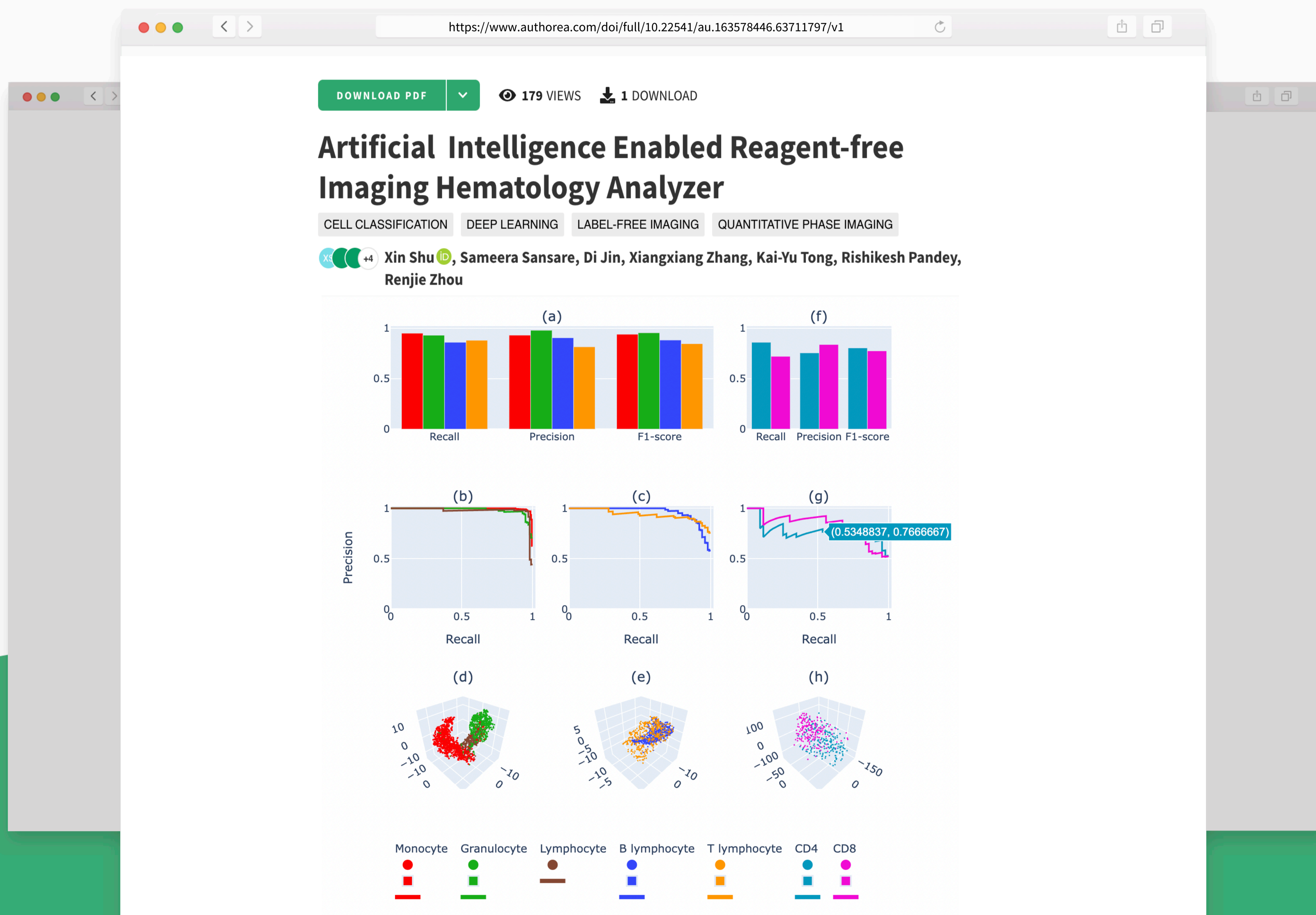


# Enriching preprints to attain reproducible open science

Preprints can be used as an experimental vehicle for directly disseminating the interactive, data-driven, and multi-media nature of Open Science outputs, in parallel with more traditional published outputs



Visit the link for an actual interactive version of this figure

## ► HTML-first preprints

Submitted content is transformed to HTML so that static figures can be replaced with interactive ones

## ► Javascript, Jupyter, and more

Authors can submit any multimedia that can be embedded in an iframe: videos, audio, Javascript-based visualizations, and computational notebooks

## ► Rotating, zoomable content

Interactivity of figures allows authors, editors, reviewers, and readers to rotate chemical compounds and zoom into maps

## ► Unlimited versioning, with DOIs

Authors can keep updating and amending the preprint with up to date data, minting new DOI versions.

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In order for science to be truly open, readers and reviewers must be able to understand how authors produced the computational results, which parameters were used for the analysis, and how manipulations to these parameters affect the results. Increasingly, journals and funding agencies are mandating that researchers share their code and data when reporting on computational results. However, even when data and code are provided by authors, and published, they are oftentimes just posted as links and relegated to platforms entirely separated from publishing workflows, disconnected from the published "full text". We believe that preprints are better suited than external repositories in enabling open, reproducible science because they are connected to the published full text via scholarly infrastructure, they are author-centric, and allow versioning. In particular, we propose a simple (yet innovative and experimental) workflow whereby authors deposit a preprint version of their articles in an html-first preprint server. In it, authors can then enhance the preprint, through edits and revisions, with data, code, computational notebooks, interactive visualizations, and dashboards. As such, preprints can be used as an experimental vehicle for directly disseminating the interactive, data-driven, and multi-media nature of Open Science outputs, in parallel and connected with more traditional published outputs.