




# mrivis: Medical image visualization library for neuroscience in python

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## Software

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## Summary

Neuroscience research routinely demands a variety of visualization tasks, ranging from a simple 2D image to custom-built composite stacks. Different academic laboratories attend to this need differently, from being users of existing solutions to being developers of new software. The majority of them tend to be mostly users of what's already available, even though the current solutions are suboptimal or inefficient for the task at their hand. Some laboratories, when resources and skills permit, engage in in-house software development to try solve their problem. The resulting software are often either not open source at all, nor made with the intent to be reliable or distributed widely. We aim to address this need with a fully-open-source and pure-python visualization library.

`mrivis` provides easy ways to perform non-trivial medical image visualization tasks, such as visual comparison of spatial alignment of neuroimaging data. In addition, we provide a base development kit containing the following carefully-designed python classes - to traverse through 3D neuroimaging data (`SlicePicker`), - produce customizable collages (`Collage`) and - to flatten 4D or higher-dimensional MRI data into 2D images (`Carpet`) (Power, 2017).

These classes together form an easy to use development kit to build even more customized visualizations, which is often needed for cutting-edge neuroscience research.

`mrivis` is dependent on the following libraries: `matplotlib` (Hunter, 2007), `nibabel` (Brett et al., 2016) and `numpy` (Oliphant, 2007), and is already serving `visualqc` (Raamana, 2018).

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