

Hand-On Image Processing with PySAP

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PySAP (Python Sparse data Analysis Package) is an open-source, multidisciplinary image processing tool developed in collaboration between astrophysicists and biomedical imaging experts at CEA Paris-Saclay through the COSMIC project (see Farrens et. al (2020)). The objective of this collaboration being to share the image processing experience gained in different domains with the community.

In this hands-on session I will demonstrate some of the "out of the box" image processing tools available in the PySAP-MRI and PySAP-Astro plugins. In particular, I will focus on some standard problems like denoising or deconvolving galaxy images, and reconstructing subsampled MRI scans of a brain. I will also show how to use some of the modular features of PySAP to design image processing tools for new problems of even different imaging domains.

Throughout the session I will endeavour to provide some basic technical background and present the problems such that it should be possible for everyone in the audience to follow. I will also include links to tutorials for more in-depth explanations of some of these topics for those who are interested.

Finally, I will reserve a few minutes at the end to explain how you can contribute to the development of PySAP.

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