

Mini Grant RSN5: Development of optimal tools to perform deblending and photometry in astronomical images by combining simulations and deep learning models

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Funding granted: 15k€

Among the main milestones achieved by this project so far we can mention:

- Purchase of the equipment required, which includes a GPU, to satisfy the processing needs of the project in terms of the computer-power available.
- Generation with GalSim of a first set of idealistic Euclid-like multi-wavelength simulations based on double-component galaxy models, including imaging but also RMS maps.

- Generation of a realistic set of Euclid-like multi-wavelength simulations based on the degradation of HST/JWST data, including imaging and RMS maps.
- Benchmarking of standard detection and deblending algorithms, such as SExtractor and Asterism, using these simulations as ground-truth.
- Successful training of the first deep learning models making use of all the synthetic data generated.

Other activities related to this project include attendance to the following conferences and workshops in order to present results and discuss with collaborators:

- Workshop: Big Data within Science and Industry (University of Milano-Bicocca, Milano, Italy - September 22, 2023)
- Conference: Astrominformatics 2023 (Osservatorio Astronomico di Capodimonte, Napoli, Italy - October 1-6, 2023)
- Conference: Astronomical Data Analysis Software & Systems XXXIII (University of Arizona, Tucson, Arizona, US - November 5-9, 2023)