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Astrophysics of the nearest future: big data and machine learning challenges

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It is often said that we are now living in an era of astronomical "big data", with the amount of observational data increasing by orders of magnitudes during the last decades, ane expected to increase even much faster in the coming years, with the advent of huge wide field observatories, like Vera Rubin Observatory or The Square Kilometre Array Observatory. With hundreds of petabytes of new data appearing every year, machine learning becomes a necessity. At the same time, the application of machine learning methods to astrophysical problems yields many specific challenges: small and not fully representative training samples, physical interpretability, or effective search for anomalies. I will discuss the aims, difficulties, and approaches that are being developed, making use, among other things, of examples from the research made in our extragalactic astrophysics group in NCBJ and UJ.

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