

SNAD: Machine learning assisted discovery in astronomy

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The next generation of astronomical surveys will completely change the discovery process in astronomy. Faced with millions of possible new sources per night, serendipitous discoveries will not occur. At the same time, given the significant improvement in detection efficiency it is also reasonable to expect that unforeseen astrophysical sources will be detected. However, if we do not have tools to identify them we may lose the opportunity without realizing it. The SNAD team is an international collaboration who has been working in the past 3 years to prepare for the arrival of such data and ensure the maximum exploitation of astronomical surveys. In this talk, I will describe how SNAD is using state of the art traditional and adaptive anomaly detection techniques to identify unusual objects in simulations, catalog data and the data stream from the Zwicky Transient Facility (ZTF). Finally I will describe the efforts currently in place to prepare these tools to deal with the alert stream coming from the Vera Rubin Observatory Legacy Survey of Space and Time through the connection between SNAD and the Fink broker.

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