

LA SERENA SCHOOL FOR DATA SCIENCE: APPLIED TOOLS FOR DATA-DRIVEN SCIENCES

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The volume and complexity of astronomical data continues to grow as the current generation of surveys come online (PanSTARRS, Gaia, Dark Energy Survey, VISTA). Astronomers will need to work with giga, tera and even petabytes of data in real time (LSST). This poses the challenges of developing and using new tools for data discovery, access, and analysis. At the same time, there are new opportunities for interdisciplinary research in applied mathematics, statistics, machine learning, crowd-sourcing, etc. Astronomy provides a sand-box where scientists can come together from diverse fields to address common challenges within the “Big Data” paradigm.

In response, since 2013 the AURA-O/NOIRLab together with other Chilean organizations such as the ULS and Universidad de Chile, have implemented the “La Serena School for Data Science: Tools for Data-Driven Sciences”. In this contribution we present our initiative, which is developed annually at the AURA campus in La Serena, Chile. Between July and August, the school receives 32

students and 10 expert professors for 10 days, following an intensive program of introductory classes with an important component of hands-on learning. This is materialized mainly by the development of group projects, where students solve complex problems in groups, applying what they have learned and guided by the teachers. Participants come from various countries such as the US (NSF-funded), Chile, and other Latin American countries such as Ecuador, Brazil, Mexico or Colombia. Students from different disciplines are encouraged to participate, including (but not limited to) astronomy, physics, computer science, statistics, mathematics, biology medical informatics.

Since LSSDS began 10 years ago, we have trained more than 230 students in data science. As seen in the statistics, efforts have been made to promote diversity in all possible areas. Also, the alumni of the school has been particularly active not only “returning” as Teaching Assistants, but also replicating parts of their schools at their home institutes.

The interest of the scientific community is increasing, with a record of applicants in the last year, mainly from Latin American countries.

We are very pleased to announce that the NSF has just approved the budget to fund LSSDS through 2024. ¹⁰ We invite all Latin American institutions to support this initiative!

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¹⁰Additional information and applications: http://www.aura-o.aura-astronomy.org/winter_school/