La Serena School for Data Science: Applied Tools for Data-Driven Sciences

Guillermo Damke
AURA / Universidad de La Serena
Live from NOIRLab @ AAS237
Outline:

- The LSSDS
- Regular On-site program
- 2021 School
- Questions
Motivation:

- The volume and complexity of scientific data continue to grow incredibly rapidly.
- The current generation of wide-area astronomical surveys and the next generation of time-domain surveys will result in peta-scale datasets.
- *New opportunities for interdisciplinary research in applied mathematics, statistics, machine learning, and other related topics.*

* Astronomical provides a sandbox where scientists can come together from diverse fields to address common challenges within the "Big Data" paradigm.
As a response, the AURA Observatory started the LSSDS in 2013, together with other Chilean organizations.
Since 2013, the school has taken place in 2014, 2015, and currently between years 2017-2022 under a NSF grant for students in US institutions, and diverse sources of funding students in Chilean and Latin American institutions.
Some important aspects:

- The school seeks to promote diversity in several aspects. For example:
  - Gender
  - Background
  - Disciplines
  - Institutions

- To achieve this, a diverse international Scientific Organization Committee evaluates all applications received.

- Additionally, the school is organized by a Local Organizing Committee, coordinated between AURA and NOIRLab.
Regular program:

On-site school consists of a 9-day program (including weekend) with:
- ~⅓ hands-on lessons from discipline experts. Higher load on first days.
Usual Subjects covered by School program:

- Statistical tools applied to large data sets
- Machine Learning
- Image Analysis
- Databases
- High Performance Computing
- Deep Learning
Regular program:

- Then, school transitions to Group Projects, where interdisciplinary, international, diverse groups of 4 students and 1 professor work on applying Data Science/Big Data tools to a specific problem.
The La Serena School for Data Science

Regular program:

- A full tour to AURA telescopes in Chile (CTIO, Gemini, SOAR and Vera Rubin Observatory), including dinner and stargazing at CTIO.
- All costs, including tickets US-La Serena-US, school costs, room and board (except for dinners) are covered.
The La Serena School for Data Science
Regular program:

- School ends with Group Project Presentations.
The School in Numbers: applicants

Applicants' Majors 2017-2020

Received applications

<table>
<thead>
<tr>
<th>School Year</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>150</td>
</tr>
<tr>
<td>2018</td>
<td>200</td>
</tr>
<tr>
<td>2019</td>
<td>250</td>
</tr>
<tr>
<td>2020</td>
<td>50</td>
</tr>
</tbody>
</table>
The School in Numbers: applicants

- **Received applications** for the years 2018, 2019, and 2020:
  - Country:
    - Chile
    - United States
    - Other

- **Gender** for 2019 and 2020:
  - Female
  - Male
  - Non-Binary
The School in Numbers: participants

2019 Participants

Count

Gender
Female
Male
Non-Binary

Discovering Our Universe
Together
The School in Numbers: participants

![Bar chart showing participant majors by school year (2018 and 2019). The chart includes categories such as Astronomy/Astrophysics, Computer Science, Physics, Bio/Bioinformatics/Medicine, Other, Engineering, and Maths/Statistics.]
The School in Numbers: participants
REGISTRATION FOR 2021 IS OPEN!

- The 2021 program will be **FULLY ONLINE**
- The program will include Synchronous and Asynchronous sessions
- Preliminarily Synchronous load estimated ~3 hours / day.
- 10 days program
- Registration deadline: 2 April 2021

http://www.aura-o.aura-astronomy.org/winter_school/
Questions?

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