Dr Lorenzo Spina

Data Scientist

Data scientist with 7+ years of experience in top research institutes around the globe and a strong background in astrophysics. Ferocious coder (Python) and machine learning enthusiast. I collect big datasets, apply mathematical modelling, algorithms and statistical tools to answer questions. I am a curious learner and a passionate storyteller from data to science, always looking for original solutions and surprise endings.

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Work Experience

09/2017-Present	**Monash University (Australia)** Postdoctoral research fellow
01/2015-08/2017	**University of Sao Paulo (Brazil)** Postdoctoral research fellow
01/2014-12/2014	**Astronomical Observatory of Arcetri (Italy)** Postdoctoral research fellow
09/2009-01/2010	**NASA, Space Telescope Science Institute (US)** Research grant

Education

PhD (2014)**, Master** (2010)**,** and **Bachelor** (2008) in Physics and Astronomy (University of Florence, Italy).

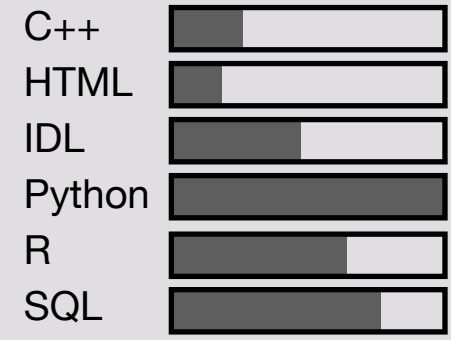
Current Duties

- Data analysis (machine learning, Bayesian inference, gaussian process, time series analysis, big datasets).
- Programming (Python, R).
- Leadership of research projects and scientific teams.
- Lecturing and Student supervision.
- Seminar and colloquia organization at the School of Physics and Astronomy, Monash University.

Technical Skills

- Scientific thinking and programming.
- Expert in Python. Excellent knowledge of R, query language (SQL), API, Cloud.
- Machine learning. Supervised (XGBoost, SVM, random forest, nearest neighbors) and unsupervised learning (K-means).
- Expert in advanced statistical, predictive modelling, and analytical techniques (Bayesian methods, Gaussian processes).
- Experience with large, unstructured datasets and pipelines.
- Data manipulation (data cleansing, feature engineering; pandas).
- Problem solving: 7+ years of experience in finding relevant questions and innovative solutions.
- Data visualization (matplotlib, seaborn).
- Exceptional communicator. Confident in providing clear messages, explanations of analysis and actionable insights.

Programming Languages



Soft Skills

Analytical skill
Creativity & Innovation
Data storytelling
Details oriented
Leadership
Mentoring & Supervision
Outreach
Problem Solving
Receptivity
Research
Team player
Teaching

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Achievements

- **Innovation.** Developed a pioneering approach to study the chemical composition of stars with precision 10 times higher than that of standard approaches. This method establishes the benchmark precision that needs to be achieved by next generation instruments mounted on multi-billion dollar telescopes.
- **Project planning.** Developed a code that predicts the probability to successfully detect planets. Given that the estimated cost of an unsuccessful observational campaign ranges between AU $10k and $100k, it is of paramount importance to test its feasibility before the astronomical observations are carried out.
- **Strategic vision.** There are millions of nearby stars that could potentially host Earth-like planets. I have established a method to identify stars with the best chances of hosting analogues of our Solar System. Though my method, the expensive observational campaigns can now maximize their return.
- **Leadership.** Led teams of 10+ researchers in the framework of international scientific collaborations.
- **Mentoring and supervision.** I have supervised undergraduate and PhD students on projects that have been successfully accomplished.
- **Teaching.** I am lecturing at Monash University, which is ranked as the 55th university in the world and the 6th in Australia (source: World University Ranking).
- **Communication.** I have received 12 invitations to speak at workshops, conferences and institutions in Australia and overseas.
- **Big Datasets and Cloud**. Successfully accomplished projects based on the ESA Gaia database, which contains data for 1.7 billions of stars for a total size of 1 PB.
- **Initiative.** My projects have awarded observing time on the world largest telescopes for an equivalent monetary value of AU $500k.
- **Organization.** I have organized 4 scientific international conferences. I am currently the organizer of seminars and colloquia at the School of Physics and Astronomy, Monash University.
- **Productivity and impact.** Authored 40+ scientific publications. The impact of my publications (1000+ citations) places me in the top 10% of Australian astronomers within 10 years post-PhD (source: Pimbblet 2011). These statistics indicate that I am a top-level scientist, capable of building a successful career.

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Media Exposure

New Scientist Link
Media INAF Link
Astronomiamo Link1 Link2
Segmento Link
Astronomy Australia Link
NASA Link
Space.com Link
ESO Link

Languages

Italian	Native
English	Full
Portuguese	Full
Spanish	Basic

References

Available upon request