Data Science Notes

Barclays Research's Data & Investment Sciences blog, where we dive into some of the frequently asked questions about data science and how it is reshaping investing.

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How to hire data scientists

Data Science

Vincenzo Pota

Adam Kelleher

Liliana Cruz Lopez

www.barclays.com

It all started in 2012, when the Harvard Business Review headlined "Data Scientists: The Sexiest Job of the 21st Century." A decade later, data science has become a well-established, sought-after profession across organizations at all scales. In this blog, we ask: who are data scientists, where do they come from and what do you need to know to hire them?

Data scientists are people able to manipulate information and to transform it into actionable insights for the business

The role is nothing new compared with a traditional data analyst. The novelty is in the method.

- **The data.** Data scientists break free from the Excel spreadsheet framework in favour of low-level programming languages. This gives them the freedom to manipulate more exotic datasets, such as unstructured data, which account for up to 80% of the data assets in an organization. They are also able to employ more powerful tools for working with structured data, such as SQL databases and data structures such as Data Frames.
- **The science.** Data scientists are often accomplished in math, statistics, and computer science. They apply the scientific method to a business problem (hence, the "science" in "data science") because many of them have formal scientific training from work in other fields. As such, they can dissect a dataset using innovative algorithms and cutting-edge technologies for statistical and causal inference.

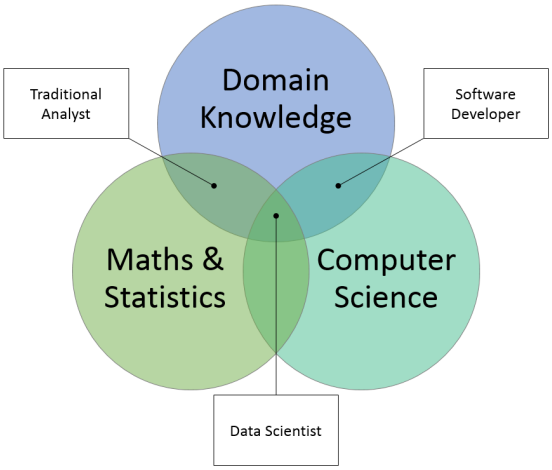
In the early days of data science, data scientists were often software engineers or database administrators who found their primary role shifting toward answering business questions with data. Many people hired as data scientists were former academics or professionals with a scientific background and a little computer programming experience. These people had learned scientific reasoning and programming languages as part of their daily job.

More recently, many data scientists have emerged from dedicated academic programs and bootcamps or are self-taught using the many resources available online.

Data scientists tend to be the end-users of many fashionable buzz words in the industry. They can use **AI** or **Machine Learning** to create a **sentiment model**, possibly from **Big Data**, using a **Cloud infrastructure**, and then visualize the results on a **dashboard** through a **data API.**

The reality is that data science is a vast and dynamic discipline and, as with all subjects, people tend to specialise in particular areas. Hence, it is common to find data scientists specialised in data modelling and machine learning or in data manipulation and visualisation, but not both. The key point is that unicorn data scientists, i.e., data scientists who are good in all data science topics do not exist.

FIGURE 1
A Venn diagram showing a simplified skillset of a data scientist



Source: Barclays Research

"A mythical beast with magical powers who's rumoured to exist but is never actually seen in the wild."

If you are thinking of hiring a data scientist, there are a few points to keep in mind:

- **Abandon the idea of hiring a "unicorn."** Be mindful of recruiters trying to sell you the idea of the data scientist being good at everything. Instead, choose a data scientist who suits your needs. If you have a lot of messy data, hire someone who is good in data wrangling. If you have good, clean data and all you want are models, hire someone with a theoretical background and extensive knowledge of model building. We use a multi-faceted written test to assess strengths and weaknesses.
- **Do not forget soft skills.** Their importance grows the more exposure the data scientist has with the rest of the business. Developing a good performance model is of no use if its creator cannot "sell" it to non-technical stakeholders within the business. Presenting results in a clear and understandable way is a must if the person is in a front-office role. We assess these with a series of face-to-face interviews with potential team members and stakeholders within the business.

- **Integrate them in your business.** The model of planting a data scientist in a cubicle and expecting insights to bloom a few days later does not work. You must fully integrate data scientists into your business. It is the only way they can learn the domain knowledge required to tailor their work to your business (see Figure 1). Let them sit next to the end-users of their insights; let them attend team meetings; train them into the domain skills they are lacking. At Barclays Investment Bank, data scientists sit next to equity research analysts. This allows them to absorb as much domain knowledge as possible, which lets them focus their work toward answering questions that are important for the business, instead of just answering questions.

Data science in finance: who should you look for?

The integration of data science in finance is behind that of other industries. This is changing slowly. It is unlikely you will find data scientists with 10 years' experience in finance or investment. So how do you hire data scientists in this field?

Data science is a technical field in its own right. Just as you should not expect a data scientist to be great at every aspect of data science, you should expect variance in their level of financial domain knowledge.

You can find a good number of candidates at more junior levels with modern data science experience in a finance setting. The field has exploded into finance only in recent years, so it is harder to find financial domain knowledge together with modern technical skills at more senior levels.

A strategy that we believe works mimics one that tech companies take: data science is a team that integrates into the business in part by working with a "product" team. The product team can help data scientists understand which questions are important to answer and work with them collaboratively to answer them. For us, that team is called "Investment Sciences". Our projects often involve a multi-person team where a research analyst, an investment scientist, a data scientist, and occasionally a software engineer work together to answer a research question. We've found that by working together with this structure, our teams can produce quality research more quickly.

In short, when hiring data scientists, rather than looking for a superstar unicorn, you should look for team players who have a core set of strengths and a willingness to learn.

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