2.1 Maslow's hierarchy of needs
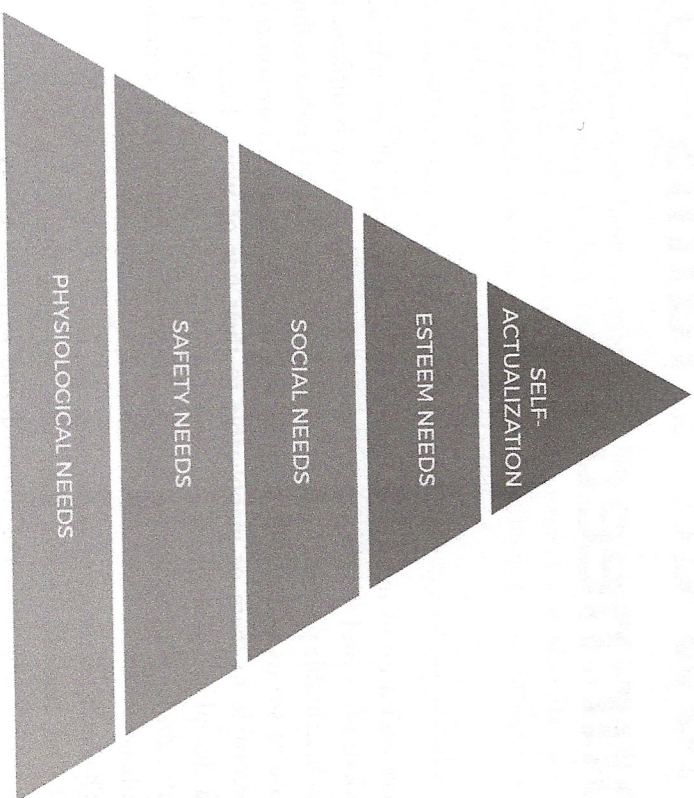

SELF-ACTUALIZATION

ESTEEM NEEDS

SOCIAL NEEDS

SAFETY NEEDS

PHYSIOLOGICAL NEEDS

Data science and physiology

At the bottom of Maslow's hierarchy are physiological factors, the basic needs for humans to simply survive. How can data help with those most basic requirements? How can it improve upon them?

Let's take the air we breathe as an example. Air pollution has been a major global cause for concern ever since the Industrial Revolution of the late 18th and early 19th centuries. We might automatically imagine smog to be a phenomenon of the past, as in the case of London in the 1950s, when coal emissions regularly covered the city, but smog continues to affect a large number of places around the world, from China to Brazil.

Any technologies that are designed to reduce pollution in affected cities are reliant on data: to improve the condition of the air, it must first be monitored.

CASE STUDY Environmental data and Green Horizon

Green Horizon, launched by IBM in 2014, is responding to the severe state of China's air quality by "transforming its national energy systems and supporting] its needs for sustainable urbanization' (IBM, 2017a). Green Horizon assimilates data from 12 global research labs and applies cognitive models to the gathered data in order to inform the project's central initiative to reduce pollution. Here, data is essential for monitoring the fluctuations in air pollution in selected areas, and for scientists to analyse the various factors that directly and indirectly affect the air's quality, temperature and state in order to begin improving China's physical environment.

The great benefit of these projects is that environmental data is, more often than not, publicly available and on a global scale, meaning the technological developments to help combat the issue of air pollution can move swiftly. Having access to important datasets that improve our most basic need is essential for understanding how our technologies can perform better. That is why we now have special glass panes that can be installed in buildings to allow windows to 'breathe', cleaning the air inside the premises and thus protecting its inhabitants. That is also why we have filters that can be put into factories to reduce their emissions and protect local residents from poisoning.

Sustainable food

Food is another case example of how data can respond to the most basic of human needs (physiological factors on Maslow's hierarchy). It might be the stuff of science fiction for some, but food has been grown in laboratories for many years, and the phenomenon of 'cultured meat' is becoming increasingly imaginative. Silicon Valley start-up Memphis Meats is just one institution that has, since its establishment, developed a variety of cultured meat, from beef to poultry.

As it is still such a grey area for regulatory authorities, religions and science, cultured meat has drawn praise and ire from the world community to various degrees (Devitt, 2017). But whether we like it or not, cultured meat could soon be the future for what we eat. It will become the environmentally friendly solution to the severe strains that agriculture puts on the natural world, dramatically reducing water usage and

Still feeling hesitant about the prospect of using AI in medicine?

Watson isn't the answer to all our problems, though. The machine's AI can still make mistakes. But the difference between machine doctors and human doctors is data, and as the technology to process growing quantities increases, so does the difference in ability between human and machine.

After all, humans can absorb information from conferences, medical journals and articles, but we all have a finite capacity for storing knowledge. What's more, the knowledge that human doctors possess will largely be limited to their life experience. A machine doctor, on the other hand, can only get better the more data it is given. With instant access to data from other machines via the cloud, shared data can inform more accurate diagnoses and surgeries across the world. Thanks to exponential growth, these machines will have access to all manner of variations in the human body, leaving human knowledge flagging far behind.

Data science and belonging

After fulfilment of the second stage of Maslow's hierarchy (safety), the need for belonging within a social environment (family, friends, relationships) will follow. It states that humans need to be part of a community of people who share their interests and outlook on life. The perceived disconnect between technology and society has been a topic of much discussion in recent years. The internet is often criticized as contributing to an increasingly isolated existence where our every whim and need is catered for. As an outdoorsy person, I won't make any case in support of socializing in the digital over the physical world. However, I do believe that the relatively democratic accessibility that the internet affords to people all over the world at all hours of the day is to my mind a great asset to human existence and experience.

What's more, what makes social networks such as Facebook, Instagram and LinkedIn successful is not the usability of the platform – it's their data. A badly subscribed social network is unlikely to offer the same breadth of services as a well-subscribed network because social communication ultimately relies on relationships. If the data isn't there to connect us to the right information, whether that means human connections, images that appeal to us, or news stories on subjects in which we are interested, the social network will not be useful to us.

Data is helping to make our world much more interconnected, and it is not only aiding us in personal ventures like finding old school friends; it is also helping scholars and practitioners who are carrying out similar projects to find each other and partner up.

CASE STUDY Forging connections through LinkedIn

I love using LinkedIn – and I think that they have really applied their data to benefit both themselves and their users. A quick visit to the business network's 'People You May Know' tab will show you an inexhaustible list of recommendations for connections with LinkedIn's other users. Some of these might be people at your current workplace, but you may also notice people from your university, and even school friends, cropping up on the system as recommended connections. To do this, LinkedIn uses the data you post to your profile – background, experience, education, existing colleagues – and matches it with the profiles of others.

LinkedIn's technology has enabled thousands of people to rebuild connections with their past. And as these connections grow, so does the network's data, thereby generating yet more connections. Whenever you connect with another user, not only do you gain what they call a 'first-degree connection' but their linked colleagues become 'second-degree connections', thereby expanding your circle much further than may be apparent.

For LinkedIn, as with any other social media channels, all that is essential is input from its users. I have found numerous friends and ex-classmates on the site, many of whom have since gone into the same field as me and, thanks to data's ability to match us, this has opened up a new dialogue between old acquaintances. Knowing that I have access to friends and colleagues online builds a sense of community and maintains it long after we have moved on, whether that be from a city or a place of work, and I find this interconnectedness comforting.

By connecting with others who share our interests, courses of study and location, LinkedIn can also give us a good insight into jobs that are relevant to us. When I was in the market for a new job, I started posting status updates to LinkedIn – the platform's data algorithms identified my needs according to key words that I had used, and this is how recruiters started to find me. What was even better was that since I was writing about subjects that interested me, LinkedIn's algorithms matched me to jobs that specifically required those branches of knowledge. It was even how this book's commissioning editor found me. How's that for social media channels' abilities to improve happiness?