

## Part II

### Applying Data Science

While we hope we have shown data science's wide and growing impact, we have yet to discuss how data science "works" and how it should be approached. From diverse examples, we provide an Analysis Rubric, illustrate its use in evaluating new data science applications, and also exemplify the use of the ethical framework presented in Chapter 3.

In this part, we address these questions:

1. *How does data science solve some real-world applications?* In Chapter 4, we present six examples that collectively give a good picture of how data science applies to a large range of applications. Some of our examples, such as spelling correction and recommendation engines, are part of everyday life. Others are at the forefront of science and illustrate great opportunities to improve health or gain new knowledge about the world.
2. *How can we determine if data science can help solve a problem?* In Chapter 5, we offer our Analysis Rubric, a way of characterizing data science applications along seven dimensions. We critically review our six example applications within the Analysis Rubric's framework, both to build understanding of it and to show the diversity of issues data science application developers must consider.
3. *How should we apply data science to new problems and is it likely to work?* In Chapter 6, we use the Analysis Rubric to evaluate 26 additional applications. Comparing applications to Analysis Rubric elements shows data science's trade-offs, capabilities, and limitations. Our applications are from many different domains, and range from straightforward to rather infeasible.
4. *How broad is the range of data science problems?* Given the 31 examples in this part, we expand on the perspective provided by Chapter 2.
5. *How can the ethical framework of Chapter 3 guide us through data science's inherent conflicts?* Armed with the principlist approach to applied ethics

advocated in Chapter 3, Chapter 7 shows how the Belmont Principles can be used to analyze data science applications' ethical challenges.

This part concludes by looking ahead to how the Analysis Rubric and ethical framework combine to motivate Part III's seven categories of data science challenges.