

## 1 Chapter 9 Top-Level Nuisance Variables and Ambiguity

**Problem 9.2** *As you read the text of this book, you ultimately consume words. But the input to your brain is the visual scene you see. What do you marginalize over as you convert the picture of the page of the book to words and meanings?*

We will marginalize several variables, such as:

- 1) font style and size; different fonts may render the same word differently, so we need to process them;
- 2) letter and spacing; words will appear at different positions and spacings;
- 3) lighting and shadows; illumination will affect how ink contrast will appear

Our brain will marginalize these low-level inputs as information and uncertainties, and then produce an internal representation of the intended words and meanings.