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Review of On Intelligence

https://jdevasier.github.io/#courses

In this book, Jeff Hawkins discusses how the brain works algorithmically and how we might work towards being able to create a machine that learns similarly to humans. Many points discussed in the chapters provide excellent insight into the workings of the brain and demonstrate that there are still some misconceptions about the brain and how it works. Initially, Hawkins discusses the idea of memory and how humans store memory. He discusses the fallacy of the brain working as a parallel computer when questioning how computers, being thousands of times faster than the brain, still are not able to be more intelligent than a human.

With this he introduces the idea that brains do not actually compute things, instead, the brain uses memory to solve problems. This is a little counterintuitive, but if we consider what happens when we read, as mentioned in the book, we do not typically piece each character in a word together, sounding out each character and so on, instead, our brains recognize patterns that we have seen before in the text and uses them to determine what a word is. In this regard we can almost look at each word as an image that we see entirely rather than a string of characters that we read sequentially. In addition, our brains work auto-associatively, meaning that they predict following elements in a sequence based off of past experience. For example, a programmer might be looking at some tutorial code of a new language they are learning and see the word "hello" and know based on past experience that following this "hello" is very likely to be the word "world".