Homework 4

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Wednesdays 4-5pm

The news article I decided to choose is the same one as the one I used for Homework 1, which can be accessed via the following link:

https://www.quantamagazine.org/neural-noise-shows-the-uncertainty-of-our-memories-20220118/

The article makes use of multiple different sources, but the one I will be using to compare and contrast is:

https://www.sciencedirect.com/science/article/pii/S089662732100619X?via%3Dihub

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The most obvious difference between these two articles is the depth in which they go into describing their methods and results. This is to be expected, since the assumed knowledge level of the target audience is extremely different for these papers: one of them targets an average reader, the other targets other researchers in the field. Despite this very large contrast complexity, the news article does a great job summarizing the key points and presenting them to the reader, and this is perhaps the most impressive aspect about this article.

One such example, among many, of this is in the way both articles described how the data was collected. In the research paper, they describe in great detail how the data from the fMRI machine was processed using voxels and generative models (and the mathematics behind them) to output a normal distribution curve with a mean and standard deviation. In contrast, the news article effectively summarizes this entire process as a "decoder", an effective analogy for such a complicated process that is easy to understand. This analogy is effective because it gives the reader an idea of how the data was interpreted, but also conveniently hides the specific technicalities about how it was done. Of course, in the case of the research paper, having these technicalities is necessary for publication since other researchers in the field may want to reproduce or expand upon this experiment.

In regards to the experimental trials, however, the news article perhaps oversiplifies the methods used in the research paper. The research paper describes how subjects were asked to draw an arc reflecting their uncertianty in regards to the location of the dot, gaining more points if the arc was smaller. In contrast, the news article simply summarizes this as a "bet about the remembered location of the dot." Despite this being an effective description of the purpose of the arc, including the information of the arc would likely not hinder the reader but would instead give them a much better understanding of how subjects' uncertianty was measured in the experiment.

Perhaps most importantly, article also does an extremely good job at summarizing the main results of the research paper: the fact that the noise associated with neuron activity determines our certainty in our working visual memory. However, the news article provides a more thorough overview of the history of this field, and highlights the differences between our

previous theories regarding working visual memory and the current one involving Bayesian theory. This is particularly effective because it highlights the revolutionary nature of such a discovery, something that is not assumed to be common knowledge for an average reader. In addition to this, the news article also discusses the future of the field, and what these results mean for upcoming research. This is something that the research article omits, but is effective in the case of the news article because it leaves the reader with an idea of what we could learn from future experiments.

In summary, the news article does an effective job in unpacking the key content in the research paper, and effectively discusses what these results mean in a manner which is suitable for the general public. It effectively provides the reader with a general idea of the details in the research paper, while simultaneously omitting the technicalities and scientific jargon that might confuse an average reader. This is the aspect that impressed me the most while comparing these two sources, because despite the news article using simplistic language, it still manages to present the complex content from the research paper to the reader in a digestible way.