Notes from AMORE meeting 5

Dan Kelley (he, him)

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Summary

The main topic was AI (artificial intelligence). interface) for R.

The main topics were as follows.

1. AI in the news (note the name "Hinton").
2. Concept of neural networks.
   - A two-photoneuron animal trying to detect which direction is "up". Notation: bias+weight$signal$ $(y=b+w$x$)$. Idea: finding minima by Nelder-Meade ("simplex") method is much cheaper than a grid search but knowing derivatives will help a lot.
   - Extension to a 4-pixel "eye". Further extension to images (e.g. Video Plankton Recorder images).
   - The prime importance of Rumelhart et al. (1986). And note the second author, very much in the news these past weeks.
3. The zipcode example from Chollet et al. (2022).

Plans

From now on, AMORE meetings will be on an as-requested basis. If there is a topic you would like to see addressed in a future session, please visit the website (https::www.github.com/dankelley/AMORE) and post an "issue". Also, please be sure to "watch" this repository (see the top-right of the webpage) so you'll notice when things get posted.

Resources

- This directory holds the code for the zipcode example, plus a PDF that DEK created from his Zotero database of items he tagged as "AI". The Rumelhart et al. (1986) is an excellent place to start, to try to understand the mathematics behind the algorithms. (These many years, and many PhDs later, things have certainly advanced, and the Chollet et. al. 2022 book is very highly recommended for anyone trying to work with AI systems. Finally, the blog posting Rubiera provides a fascinating view of the protein-shape application, as well as giving a clear impression of how exciting AI is, in just this one of very many fields. Unlike many things in research, the excitement is not faked just to get funding.