Interesting criticism.

Not sure it is valid, since CNN is applied as a set of units that can be mixed and matched then trained by backpropogation to give a blackbox solution to general problems. (That they were motivated by human perception does not imply they have to be better -- do humans learn by bakpropagation?)

Can you characterize the solutions provided by both TDA and CNN? That is more of an apples to apples comparison of the two. CNN tries to recognize repeated structure in data, which it tries to group into higher level structure and interpret. I guess the fact that it uses backprop makes it more goal-centric; it reinforces the repetitions that seem to help it achieve its goal. TDA tries to recognize topological structure in data, and uses persistence to assess which structure is significant. It could be a layer in a network.

We can talk through some of this. I should loan you Proofs & Refultations.

Whenever you are going to talk about an algorithm, make sure its inputs and outputs are clearly stated.