Analysis of "Neural Architecture Search With Reinforcement Learning"

Preamble

This paper has been a struggle to read and to try and digest. It feels like the paper was written by an expert to experts(which it probably was.)

A brief statement of the problems addressed in the paper in my own words.

Hmm, to me it seems like rather than stating a problem and providing a solution Dr. Breiman is instead laying the groundwork to enable the widespread use of random forests and also shows with work and proofs that "Random Forests are an effective tool in prediction".

What I agree with/like in the paper and why.

I like how he used several different data sets to show the viability of random forests. He didn't just pick a nice data set that happened to play nice with his random forests but worked with a plethora of vastly differing sets such as Diabetes, Sonar, Zip Codes, and Waveforms.

I also really like how much work he apparently put into his paper, he could have easily said "Hey, use random forest.." and "They are amazing!", but he didn't. He thoroughly explained his ideas, his testing methodology and results.

I also found it interesting how he said at the end of section 4 "It was surprising that using a single randomly chosen input variable to split on at each node could produce good accuracy". This seems to be the recurring theme with this class and field. It definitely provokes a new way to think about the problems that are being discussed and requires a different mindset and approach then, say, other disciplines.

What I disagree with/dislike in the paper and why.

I don't think I am in a position to disagree with anything he said except for how "dense" the paper was. It really felt like I needed a strong background in math, stats, and decision trees before I could start to really understand what he was talking about. I wish I could study this field in depth for a few years, really get to know it, then write a paper to myself that I could read now and have a better idea of what he is saying.

Any inspirations I found in the paper.

It is really hard to pull inspiration from a paper that was hard to digest, but I would have to say that if you are ever going to try and show that some idea or working knowledge you have is really awesome and you want to convince others of how awesome your idea is. Then you will need to do something like what Dr. Breiman did, and show how your idea works and plays with several different things and not cut it any slack when reporting its shortcomings.

One other thing that I really think is cool about this paper is that it was written almost 20 years ago, but due to the way in which he wrote it, its principles can still be applied today. It is fascinating that he didn't write this paper with a dependency on modern hardware capabilities, but wrote it on the basis of mathematically proving an idea, and then not really mentioning anything regarding current processing capabilities. This paper, and others really reinforce the idea that the current state of the art in computing isn't nearly as important as the discipline for why you are able to compute anything in the first place.