Backpropagation algorithm with adaptive learning rate [closed]

I searched to learn Backpropagation algorithm with adaptive learning rate, and find a lot of resources but it was hard for me to understand, because I'm new in neural network. I know how standard backpropagation algortihm works, very well. Is anybody here to explain me how these two algorithms are different from each other?

algorithm | neural-network | backpropagation

edited Nov 13 '13 at 12:09

asked Nov 12 '13 at 23:12
starrr
275 4 19

closed as too broad by Jim Lewis, Mitch Wheat, Flimzy, Josiah Hester, Pragnesh Chauhan Nov 13 '13 at 3:27

There are either too many possible answers, or good answers would be too long for this format. Please add details to narrow the answer set or to isolate an issue that can be answered in a few paragraphs.

If this question can be reworded to fit the rules in the help center, please edit the question.

"I want to write a matlab program to train a neural network " - what's stopping you? And what is this?: stackoverflow.com/questions/19939909/... – Mitch Wheat Nov 12 '13 at 23:21

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1 Answer

I think the core difference is the update function, as you could see from here

For classic EBP

```
w(k+1) <- w(k) - a * gradient
```

For adaptive learning:

```
w(k+1) <- w(k) - eta * gradient
```

where:

```
eta =

    (w(k) - w(k-1)) / (gradient(k) - gradient(k-1))    if eta < etamax
    etamax                                             otherwise
```

So you only need to change the weight update function part. The above is just a simplified version, for implementation, you would have to adjust eta according to the error(k) and error(k-1). And there are many ways to do that.

The basic idea of *adaptive* is that

1. if you get a smaller error, you want to try increasing learning rate
2. if you get a larger error, you want to decrease learning rate to that it converges

edited Nov 12 '13 at 23:34

answered Nov 12 '13 at 23:25

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