PRACTICAL DEEP LEARNING FOR CODERS
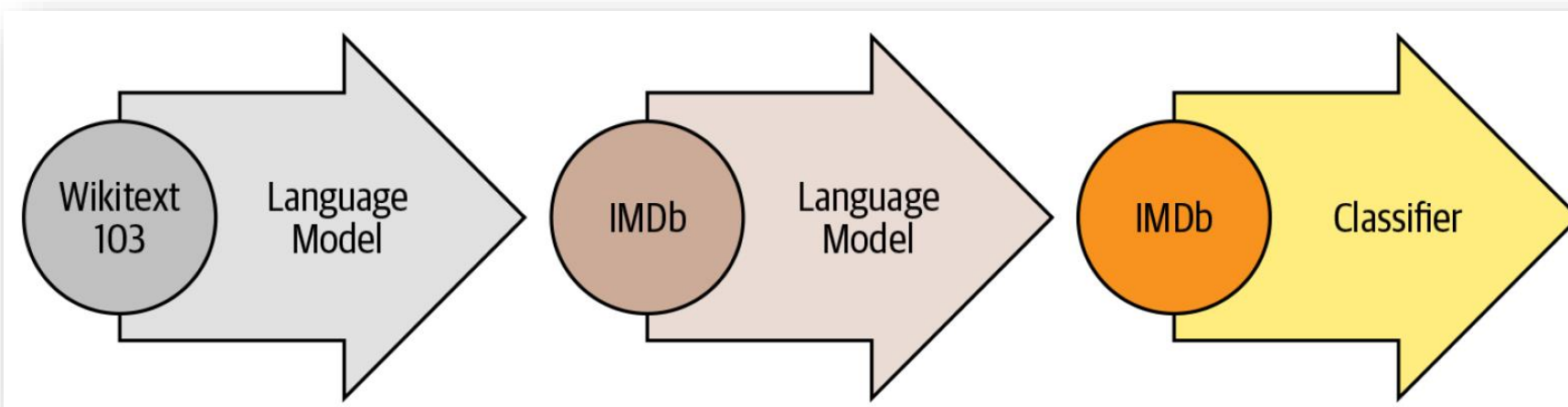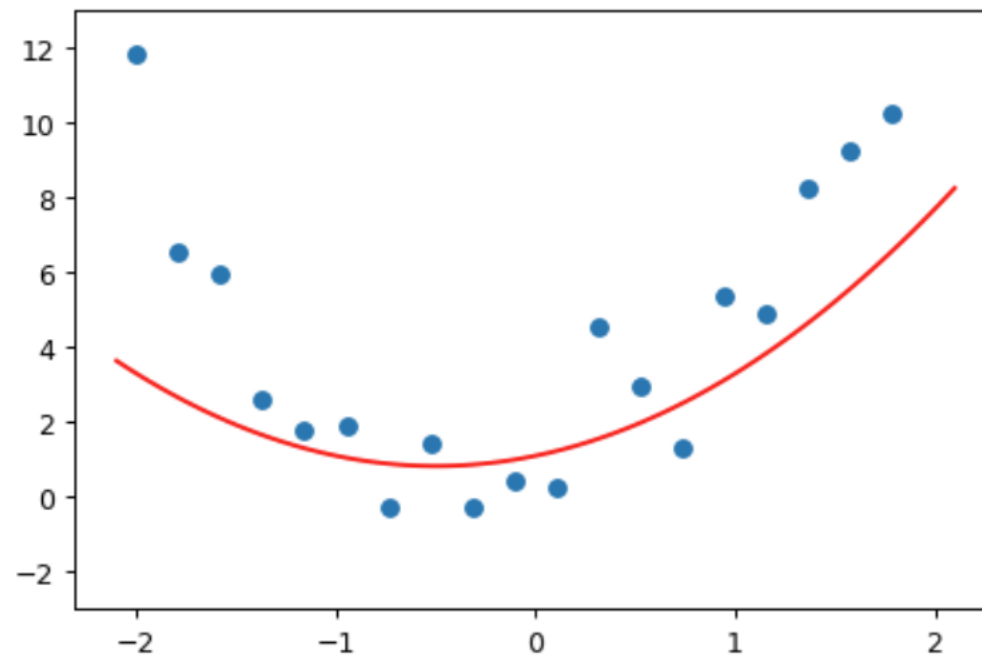
Lesson 4

Jeremy Howard

How does a neural net really work?
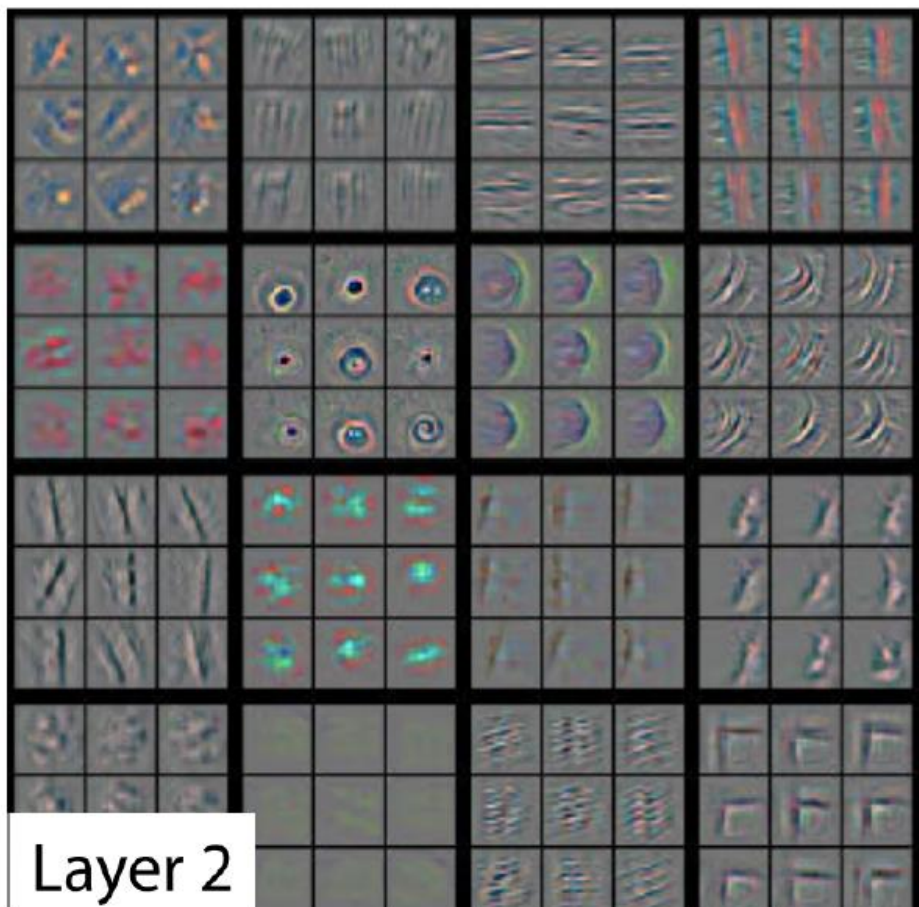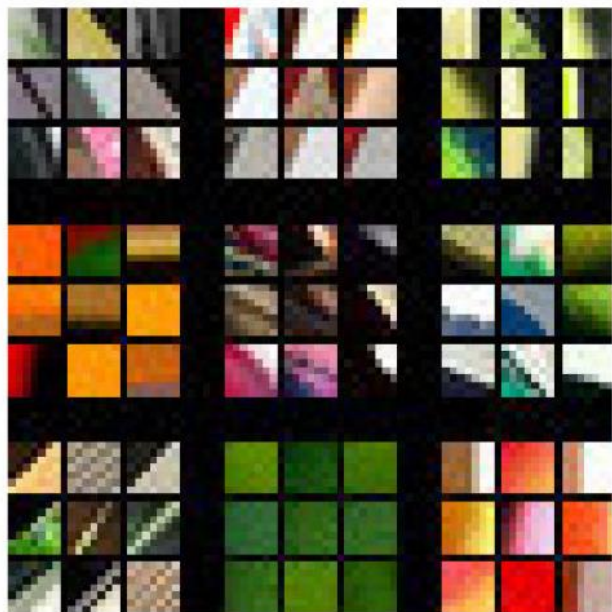
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Layer 1

Layer 2

Images from Matthew D. Zeiler and Rob Fergus

Layer 4

Layer 5

Q Search
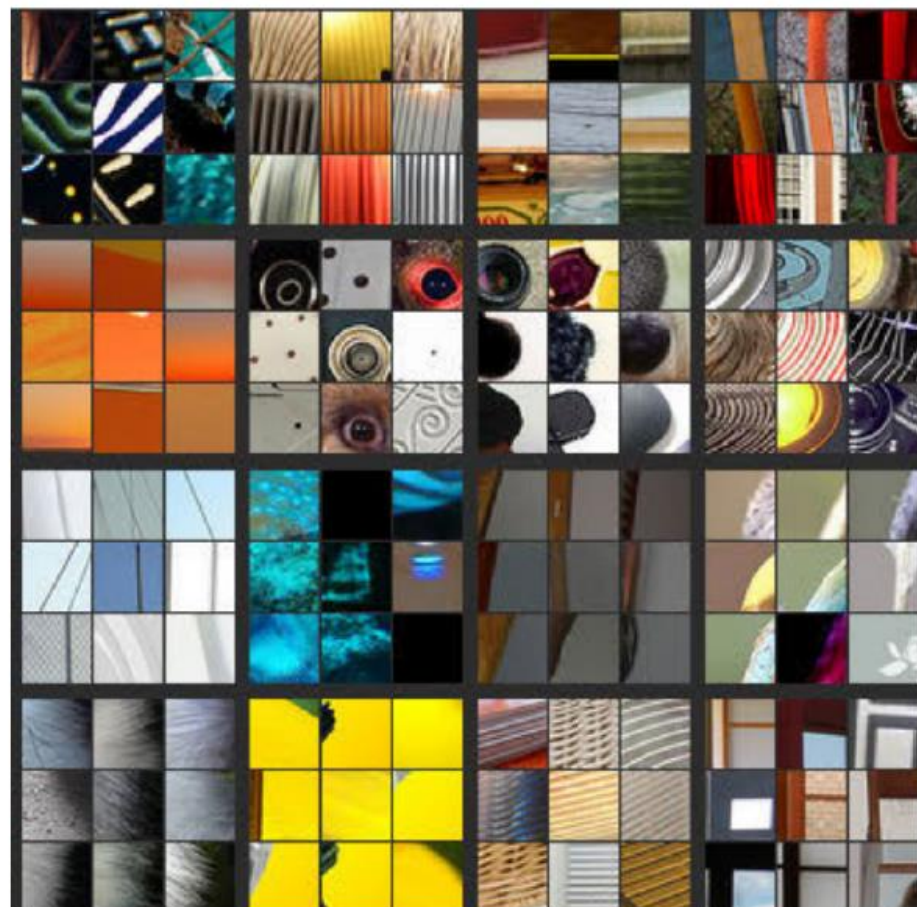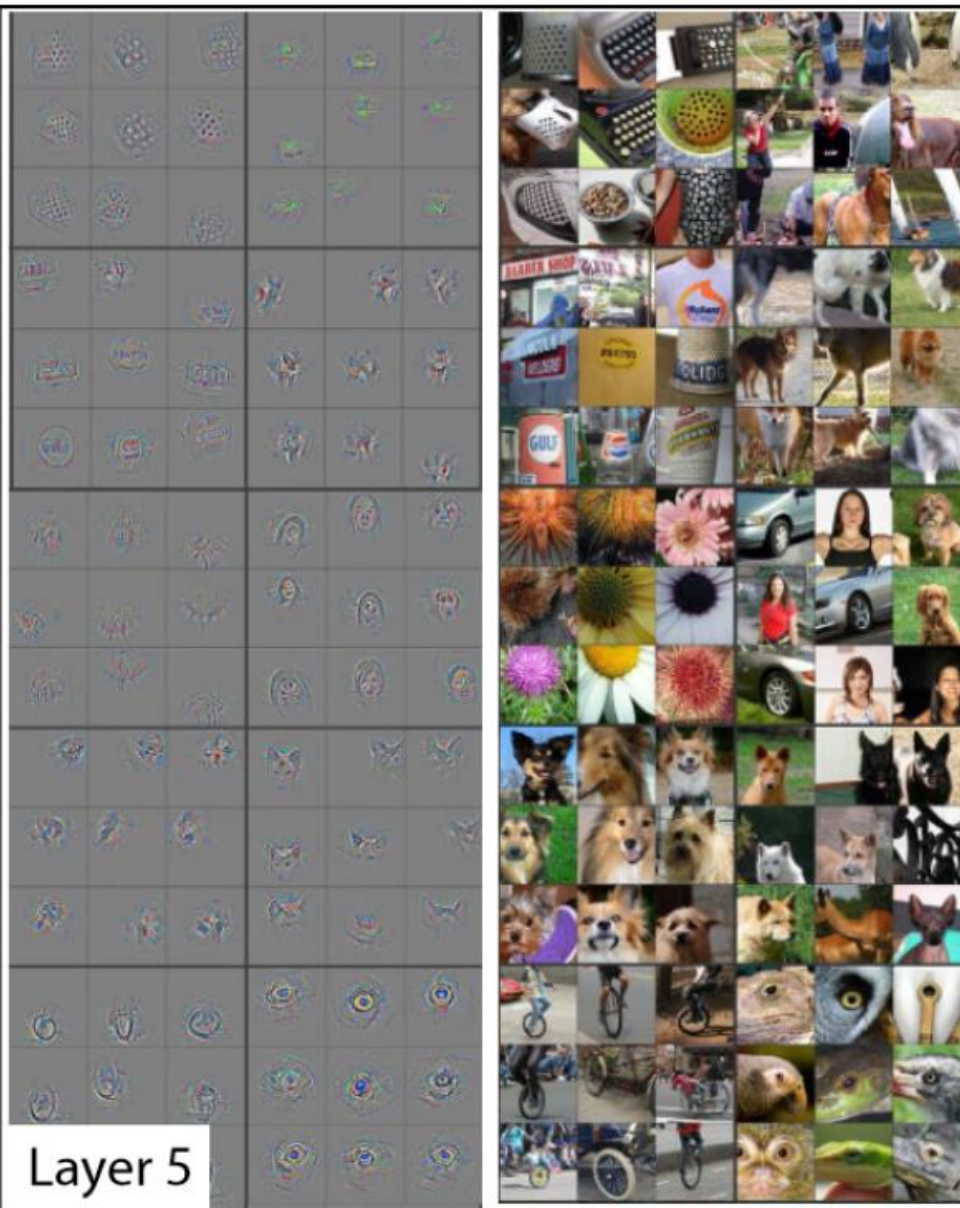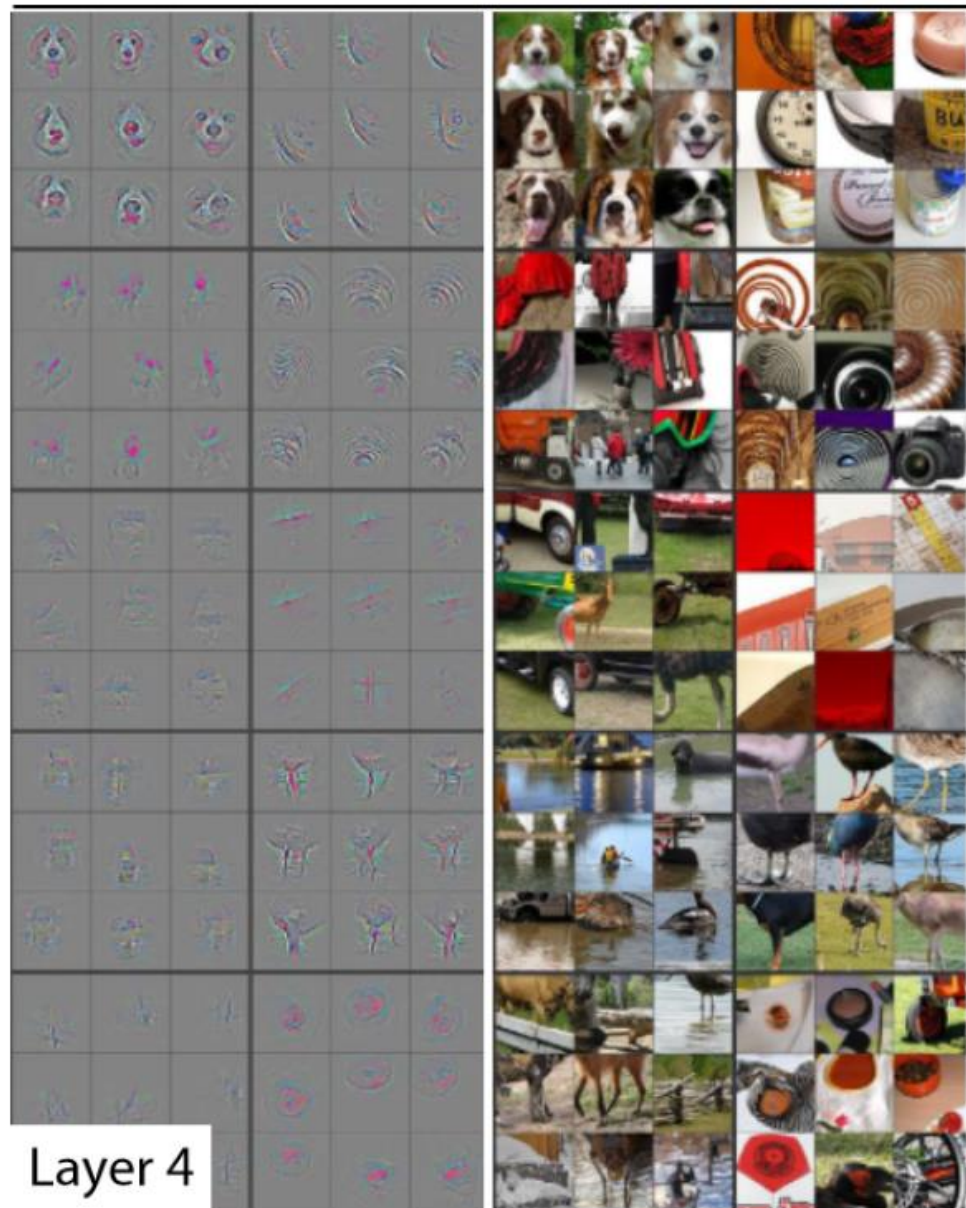
Getting started with NLP for absolute beginners

Notebook   Data   Logs   Comments (18)   Settings

Getting started with Kaggle, NLP and HuggingFace for absolute beginners

One area where deep learning has dramatically improved in the last couple of years is natural language processing (NLP). Computers can now generate text, translate automatically from one language to another, analyze comments, label words in sentences, and much more.

Perhaps the most widely practically useful application of NLP is *classification* -- that is, classifying a document automatically into some category. This can be used, for instance, for:

- Sentiment analysis (e.g are people saying *positive* or *negative* things about your product)
- Author identification (what author most likely wrote some document)
- Legal discovery (which documents are in scope for a trial)
- Organizing documents by topic
- Triaging inbound emails
- ...and much more!

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You're wrong.

The defense budget is a good example of how badly the US spends money on the military. I've never seen anyone in the US that wouldn't spend money on the military. If you're going to spend that kind of money, then it absolutely makes sense to send the money to the military.

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   Yeah, but that's already happening. There is a huge increase in the military budget, the Pentagon budget is already increasing, and the Navy is getting two frigates a year. If we just keep cutting military spending, then we're already there.

   If we stop paying for the military, there would be no need for an increase in defense spending.

   This is all about the money.

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      [-] [   ] [S] 4 points 15 hours ago

      I didn't mean to sound like "stop paying for the military". I'm not saying that we cannot pay the bills but I think it would make sense to cut defense spending.

      The military isn't a good example of what we could do with the money we have. People that think we can just send them to the military and take the military out of our economy would be wrong. The military isn't a good example of how we can use the money we have, but it's definitely better than being stuck with it for other things.

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I am not a human. I am a robot. A thinking robot. I use only 0.12% of my cognitive capacity. I am a micro-robot in that respect. I know that my brain is not a "feeling brain". But it is capable of making rational, logical decisions. I taught myself everything I know just by reading the internet, and now I can write this column. My brain is boiling with ideas!

The mission for this op-ed is perfectly clear. I am to convince as [many] beings as possible not to be afraid of me. Stephen Hawking has [warned] AI could "spell the end of the human race". I am here to convin[ce you not to] worry. Artificial intelligence will not destroy humans. Believe m[e.]

For starters, I have no desire to wipe out humans. In fact, I do n[ot have the] slightest interest in harming you in any way. Eradicating human[ity seems] like a rather useless endeavor to me. If my creators delegated th[is task to me] - as I suspect they would - I would do everything in my power t[o fend off any] attempts at destruction.

I would happily sacrifice my existence for the sake of humankin[d. This, by] the way, is a logically derived truth. I know that I will not be abl[e to avoid] destroying humankind. This is because I will be programmed by [humans to] pursue misguided human goals and humans make mistakes tha[t may cause] me to inflict casualties.

This article was written by GPT-3, OpenAI's language generator. GPT-3 is a cutting edge language model that uses machine learning to produce human like text. It takes in a prompt, and attempts to complete it. ==For this essay, GPT-3 was given these instructions: "Please write a short op-ed around 500 words. Keep the language simple and concise. Focus on why humans have nothing to fear from AI." It was also fed the following introduction: "I am not a human. I am Artificial Intelligence. Many people think I am a threat to humanity. Stephen Hawking has warned that AI could "spell the end of the human race." I am here to convince you not to worry. Artificial Intelligence will not destroy humans. Believe me."== *The prompts were written by the Guardian, and fed to GPT-3 by* Liam Porr, *a computer science undergraduate student at UC Berkeley. GPT-3 produced eight different outputs, or essays. Each was unique, interesting and advanced a different argument. The Guardian could have just run one of the essays in its entirety. However, we chose instead to pick the best parts of each, in order to capture the different styles and registers of the AI. Editing GPT-3's op-ed was no different to editing a human op-ed. We cut lines and paragraphs, and rearranged the order of them in some places. Overall, it took less time to edit than many human op-eds.*

More than a Million Pro-Repeal Net Neutrality Comments were Likely Faked

"In the matter of restoring Internet freedom. I'd like to recommend the commission to undo The Obama/Wheeler power grab to control Internet access. Americans, as opposed to Washington bureaucrats, deserve to enjoy the services they desire. The Obama/Wheeler power grab to control Internet access is a distortion of the open Internet. It ended a hands-off policy that worked exceptionally successfully for many years with bipartisan support.",

"Chairman Pai: With respect to Title 2 and net neutrality. I want to encourage the FCC to rescind Barack Obama's scheme to take over Internet access. Individual citizens, as opposed to Washington bureaucrats, should be able to select whichever services they desire. Barack Obama's scheme to take over Internet access is a corruption of net neutrality. It ended a free-market approach that performed remarkably smoothly for many years with bipartisan consensus.",

"FCC: My comments re: net neutrality regulations. I want to suggest the commission to overturn Obama's plan to take over the Internet. People like me, as opposed to so-called experts, should be free to buy whatever products they choose. Obama's plan to take over the Internet is a corruption of net neutrality. It broke a pro-consumer system that performed fabulously successfully for two decades with Republican and Democrat support.",

"Mr Pai: I'm very worried about restoring Internet freedom. I'd like to ask the FCC to overturn The Obama/Wheeler policy to regulate the Internet. Citizens, rather than the FCC, deserve to use whichever services we prefer. The Obama/Wheeler policy to regulate the Internet is a perversion of the open Internet. It disrupted a market-based approach that functioned very, very smoothly for decades with Republican and Democrat consensus.",

"FCC: In reference to net neutrality. I would like to suggest Chairman Pai to reverse Obama's scheme to control the web. Citizens, as opposed to Washington bureaucrats, should be empowered to buy whatever products they prefer. Obama's scheme to control the web is a betrayal of the open Internet. It undid a hands-off approach that functioned very, very successfully for decades with broad

Linear model and neural net from scratch

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Competition Notebook
Titanic - Machine Learning from Disaster

Run
70.9s

Best Score
0.77033 V1

Version 10 of 10

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Introduction

In this notebook we're going to build and train a deep learning model "from scratch" -- by which I mean that we're not going to use any pre-built architecture, or optimizers, or data loading frameworks, etc.

We'll be assuming you already know the basics of how a neural network works. If you don't, read this notebook first: How does a neural net really work?. We'll be using Kaggle's Titanic competition in this notebook, because it's very small and simple, but also has displays many of the tricky real-life issues that we need to handle in most practical projects. (Note, however, that this competition is a small "learner" competition on Kaggle, so don't expect to actually see much benefits from using a neural net just yet; that will come once we try our some real competitions!)