Production machine learning

that's definitely a frog

this "machine learning" is really amazing, but sometimes WEIRD STUFF happens

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What's this?


You can find that PDF at:

[bit.ly/ml-rules]

In this zine, I’ll talk about what I’ve learned about machine learning! Basically I want to talk about 5 of my favourite rules from that PDF.

(there are 43 rules, it's great advice, you should read them all)
Rule #3: Use machine learning instead of complicated heuristics

Simple heuristics can be awesome:
hey, look, if I just recommend
Minecraft to every 8 year old, it works great

ship it!

but complicated heuristics are a nightmare

if (age > 7 and gender = M
and (country = "Canada" or country = "USA")
and favorite_color = blue) ...

I have regrets

Machine learning is much more maintainable than that mess, and it'll perform better

This model is still a bit complicated, but at least it's not based on one ad hoc data analysis.
I did 2 years ago!\[1\]
Rule #10: watch for silent failures

Hey, those results don't look right...

Why is that feature null, that's not normal

Oh god this database hasn't been updated in 6 months

I fixed the database! The model works better now!
Rule #16: keep your pipeline healthy

This is sad:
I can't generate the features I need to train a new model!

And this:
I'm worried there's a bug + I don't trust our trained models!

What we want:
When I have new ideas/data, I can easily launch a new model!

We're careful about adding complexity!
Rule #24: Measure the change between models

What if the new model breaks EVERYTHING?!!

let's TEST it before we put it into prod!

Ok, I ran the old + new models on a whole bunch of examples!

measure the difference

Well, only 3% of examples have significantly different predictions, that change isn’t too big!

that was easy, and I have a better idea of what to expect

if the difference is big, I want to be extra sure that it’s an improvement!
Rule #32: Reuse code between training and production when you can

- Our training code is Python but we use C++ in production
- That's gonna cause bugs
- You haven't even seen the code
- Yep.

- You're gonna have bugs related to training / production differences
- You probably can't make this perfect
- Just try to monitor differences.
machine learning is awesome though

there are lots of weird bugs but you can get GREAT results so it can be totally worth it

❤️ this? There are more of these at

→ jvns.ca/zines ←