linear-algebra-variations

31 December 2023 21:37

- linear algebra talks about "vectors", "spaces", "column"
- it's also heavily used in AI and ML

But how are they related?
On the surface, they seem unrelated.

But it's simple if you consider the following thoughts
"decision problem"
"study new topic"
"when to start taking first notes"
"when to create rigid ideas and start creating bonds"

Ok, so!
Well when one studies a new topic, they guess important and unimportant "parameters" of the situation.

Then they start making rules based on "imp parameters".
Hopefully, the whole idea actually remains consistent with whatever rules they've built.

Ok, but where's linear algebra

It's in the parameters choosing part.

1) what parameters
2) Is a parameter relevant
3) variations - this is n-dimensional

That's it. Linear algebra represents "all" variations between parameters of a context (study topic for example).

So, when you're using linear algebra in ML, you're essentially playing with "all" variations and their "interplay".

Note: (A) variations are one aspect of ML.
choosing is another.
structure is yet another.

i.e only linear algebra is not enough for ML.

(B) So, matrices represent "if conditions", which is quite intuitive, since Andrew Ng said in ML course that the "huge numbers" of conditionals (and what they are) is the reason why we do ML, i.e manual programming is impossible.