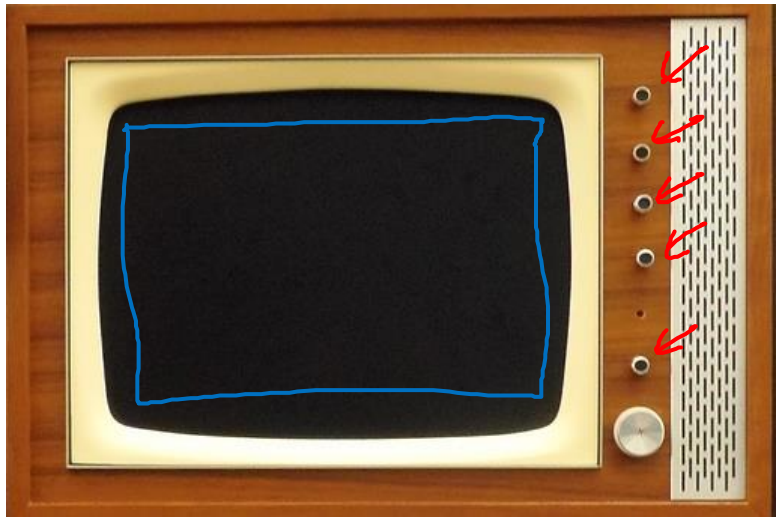
deeplearning.ai

# Introduction to ML strategy

# Orthogonalization

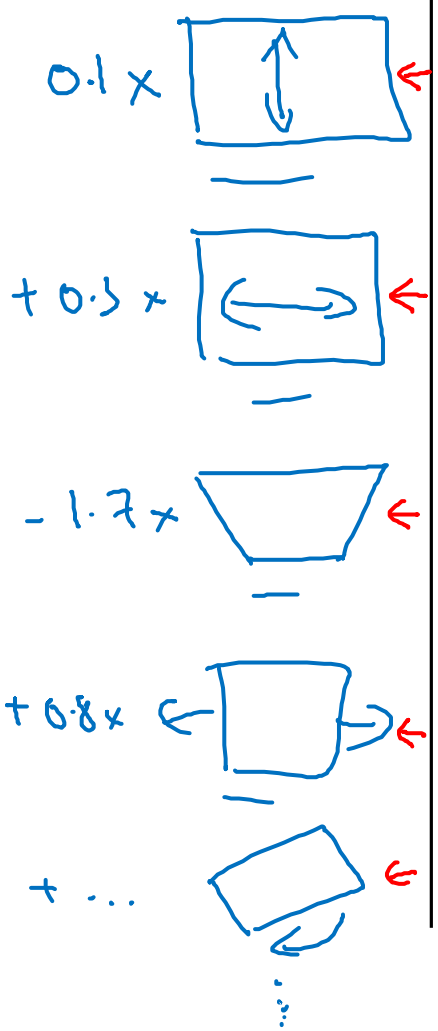
One of things I've noticed is about the most effective machine learning people is they 're very clear-eyed about what to tune in order to achieve one effect. This is a process we call orthogonalization.

# TV tuning example



Orthogonalization

So in this context, orthogonalization refers to that the TV designers had designed the knobs so that each knob kind of does only one thing. And this makes it much easier to tune the TV so that the picture gets centered where you want it to be.



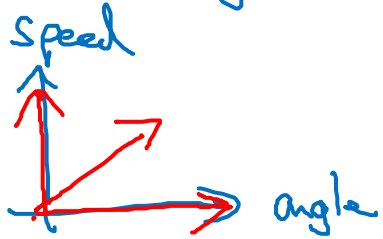

## Car

→ Steering

→ {Acceleration, Braking}

→ 0.3 x angle − 0.8 speed

→ 2 x angle + 0.9 speed.




And by having orthogonal, which means that at 90 degrees to each other. By having orthogonal control, the ideally aligned with the things you actually want to control, it makes it much easier to tune the knobs you have to tune.

Andrew Ng

# Chain of assumptions in ML

→ Fit training set well on cost function

(≈ human-level performance)

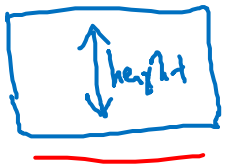

bigger network
Adam
...

early stopping

I(Andrew), tend to not to use early stopping.

↓

→ Fit dev set well on cost function




Regularization
Bigger train set

↓

→ Fit test set well on cost function

Bigger dev set

It probably means you've overtuned to you dev set

↓

→ Performs well in real world

(Happy cat pic app users.)

then it means that either your dev test set distribution isn't set correctly or your cost function isn't measuring the right thing.

Change dev set or cost function

Andrew Ng