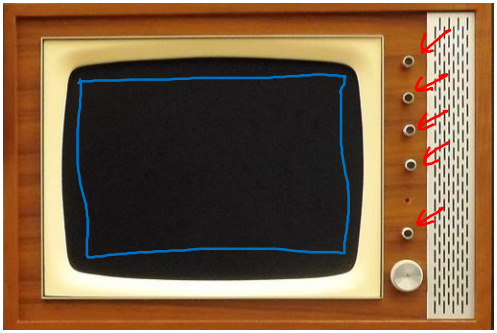
deeplearning.ai

Introduction to ML strategy

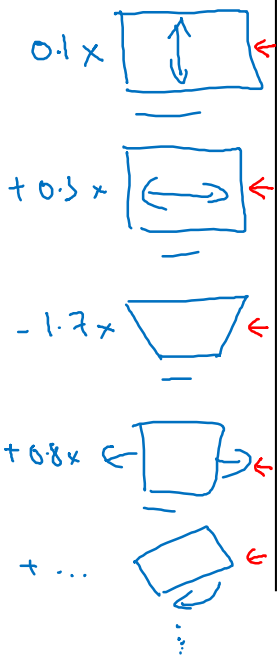
Orthogonalization

正交化

TV tuning example



Orthogonalization



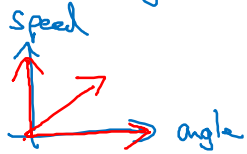
Car

→ Steering

→ {Accelerator, Braking}

→ 0.3 x angle − 0.8 speed

→ 2 x angle + 0.9 speed.



Andrew Ng

Chain of assumptions in ML

it simultaneously affects two things.

→ Fit training set well on cost function

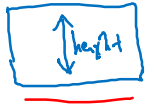
(≈ human-level performance)

bigger network
Adam
...

early stopping

→ Fit dev set well on cost function

Regularization
Bigger train set



→ Fit test set well on cost function

Bigger dev set

→ Performs well in real world

(Happy cat pic app users.)

Change dev set or cost function

Orthogonalization

Orthogonalization or orthogonality is a system design property that assures that modifying an instruction or a component of an algorithm will not create or propagate side effects to other components of the system. It becomes easier to verify the algorithms independently from one another, it reduces testing and development time.

When a supervised learning system is design, these are the 4 assumptions that needs to be true and orthogonal.

1. Fit training set well in cost function
   - If it doesn't fit well, the use of a bigger neural network or switching to a better optimization algorithm might help.
2. Fit development set well on cost function
   - If it doesn't fit well, regularization or using bigger training set might help.
3. Fit test set well on cost function
   - If it doesn't fit well, the use of a bigger development set might help
4. Performs well in real world
   - If it doesn't perform well, the development test set is not set correctly or the cost function is not evaluating the right thing.