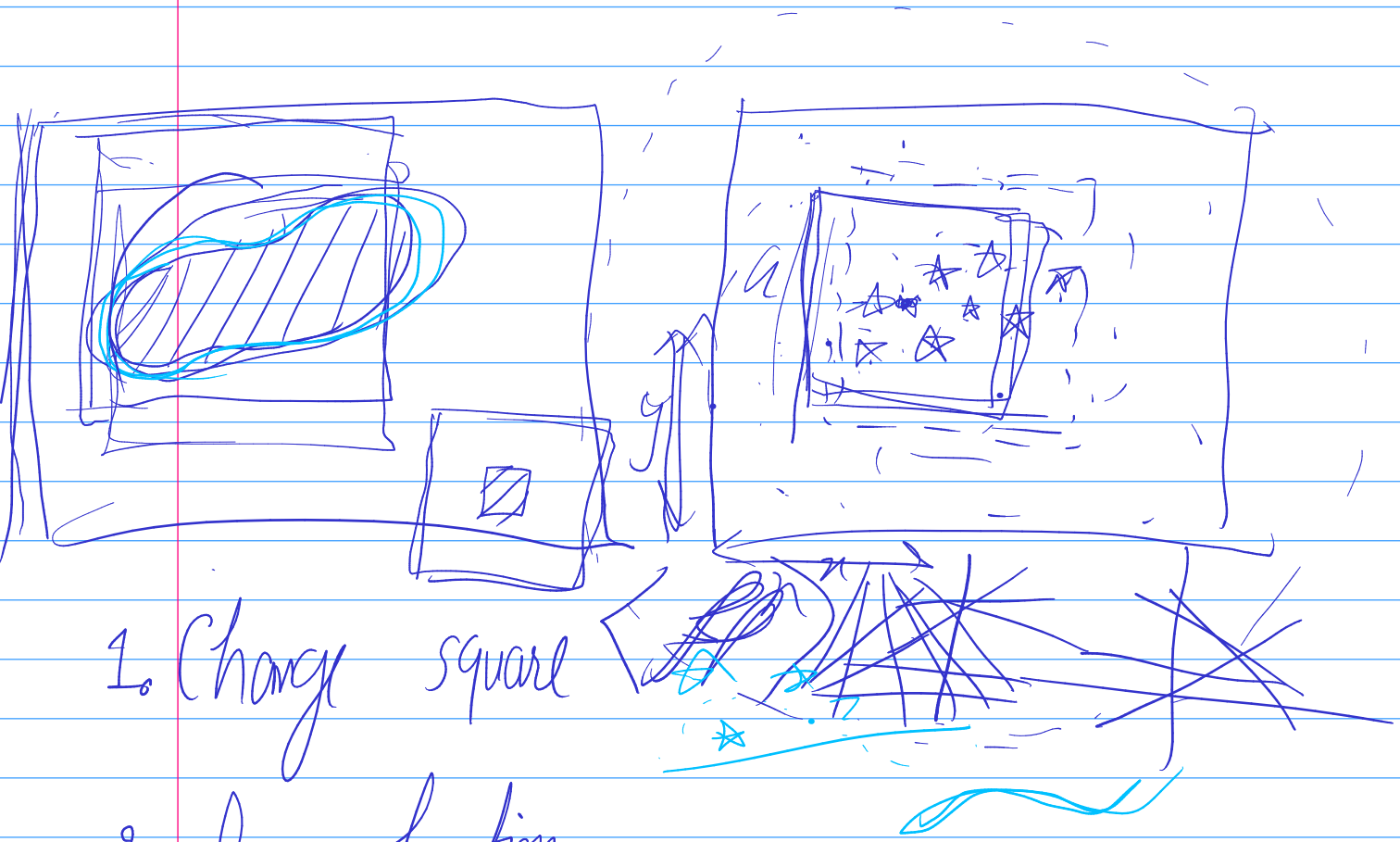
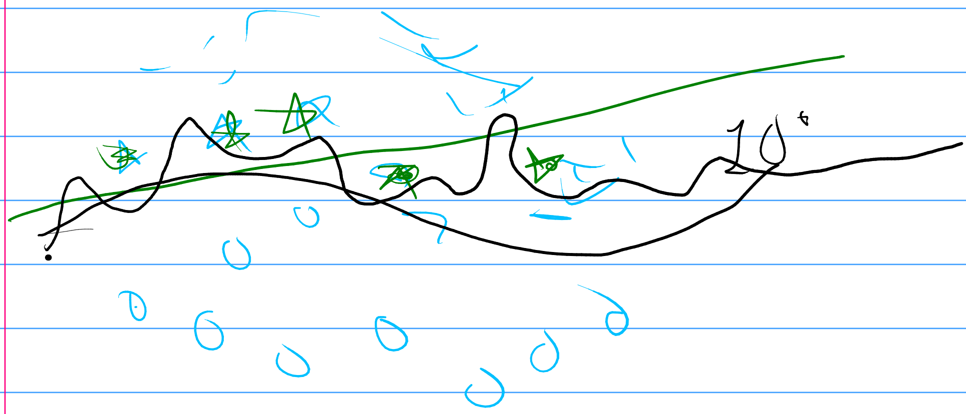
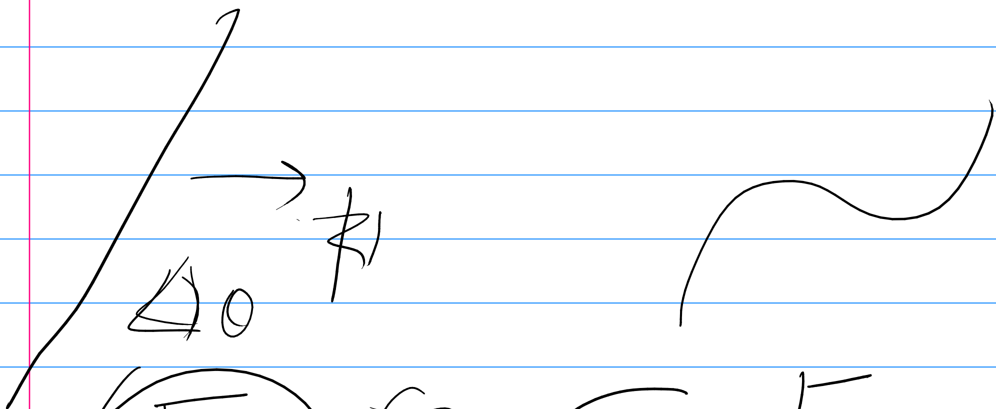
- Understanding patterns



1. Change square
2. loss function
3. Sample
4. feature eng (space transformation) →
5. algorithm





$F_l = \infty_a \subset F_{p_2} = \infty_b$

VC-dim

$a < b < c \subset NN_{51,10N}$ (∞_c)

$D = (x, y)$

$\mathbb{E}_{(x,y) \sim D}\, l(f(x), y)$

$D = (x, y)$

$R = \mathbb{E}_D\, l(f(x), y)$

ERM

$R_{emp} = \frac{1}{N} \sum_{i=1}^{N} l(f(x_i), y_i)$

1X

R - Remp

gap ≥ ε

① approximation error

bad
wrong hypothesis

② estimation error

sample

③. optimization error

$R(h) - R_{emp}(h) \leq C(H, N, S)$

IM VCdim

RadC

Probably Approximately Correct

$> 1 - \varepsilon$

δ

$\geq$