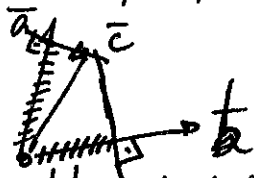


① what is the similitude between 2 points??
 if $\{\bar{a}, \bar{b}, \bar{c}\} \in \mathbb{R}^3$

$$\bar{a} = \langle 0, 0, 1 \rangle$$

$$\bar{b} = \langle 1, 0, 0 \rangle$$

$$\bar{c} = \langle 0.1, .5, .9 \rangle$$



why ~~the~~ \bar{c} and \bar{a} are
 closer than \bar{b} & \bar{c} .

- Entropy?

- Distances?

- dot product?

② Distance problem / labeling problem.

$$J_M^2(x_i, x_j) = (x_i - x_j)^T M (x_i - x_j)$$

③ ~~what is the~~

~~LMNN~~

LMNNM

ITML

LDML

what

how

find M

~~find~~ M

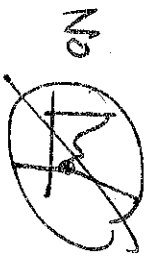
$L(M)$

how likely this M
 is \rightarrow better way.

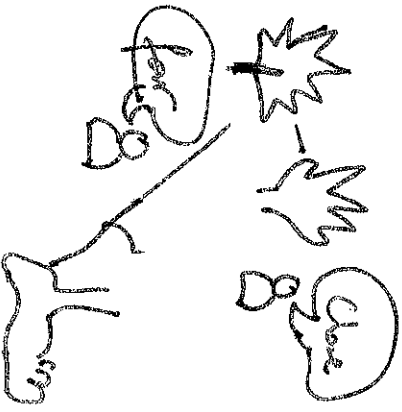
④ eq. (9)

⑤ ~~the~~ KISS vs Classif. vs Manifold-unfolding vs. ~~Dim reduction~~
 Base change (PCA).

IM144
→ d ~ W



Learning Similarity
metrics.

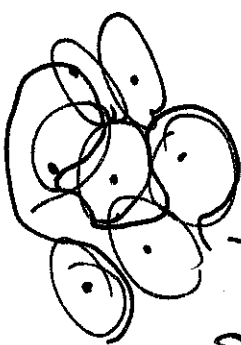


trust the label
vs.
get similarities.

Prepare for survey.
- Read paper ~~and~~ graphical abstract.

- ITM

- prior is a regularization term to
avoid overfitting.

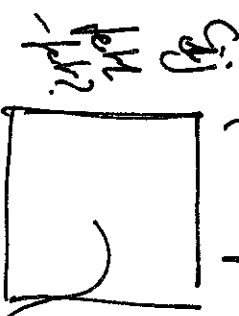


apply a variation

$$M_{t+1} = M_t + \lambda (M_t C_{ij} M_t)$$



Post1 - Post2



how similar
they are.

- what's likelihood-ratio test?

- What's the problem of overfitting

- Problem of other methods?

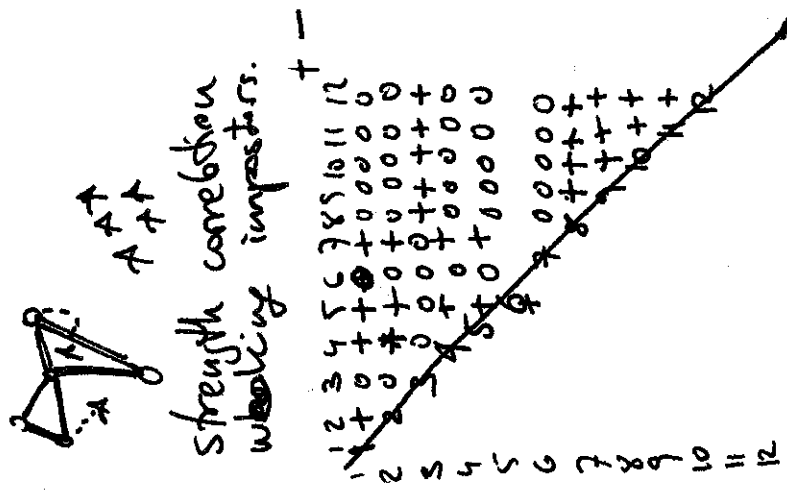
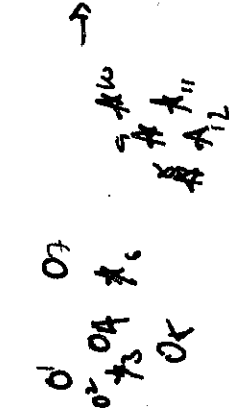
- Problem definition

- ↳ What's the Mahalanobis distance

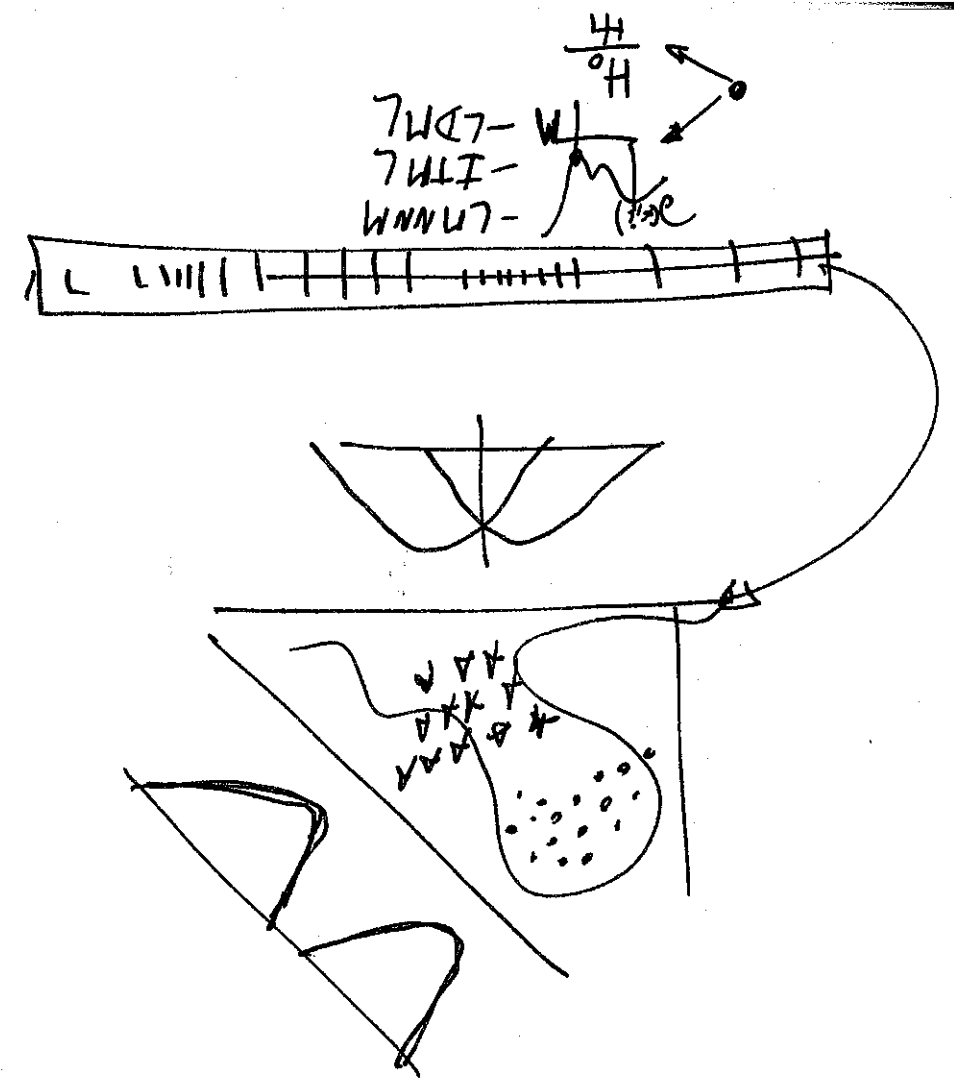
$$d_n^2(x_i, x_j) = (x_i - x_j)^T M (x_i - x_j)$$

A hand-drawn sketch of a cell. It features a central nucleus with a prominent nucleolus. The cell membrane is irregular and wavy. A long, thin, cilia-like structure extends from one side of the cell.

LMNN \rightarrow optimization \rightarrow gradient descent.



find the product.



they are similar
they are different?

-LDML.

look at the posteriors try to make them match, let the distance vary.