Image = $\begin{bmatrix} 15 & 13 & 12 & 156 & 143 \\ 14 & 11 & 154 & 172 & 164 \\ 12 & 8 & 145 & 163 & 12 \\ 15 & 10 & 13 & 14 & 5 \end{bmatrix}$

mask = $\begin{bmatrix} -1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

$-15 + 22 - 145$

$-14 + 16 - 13$

Result = $\begin{bmatrix} 15 & 13 & 12 & 156 & 143 \\ 14 & -138 & \square & \square & 164 \\ 12 & -11 & \square & \square & 12 \\ 15 & 10 & 13 & 14 & 5 \end{bmatrix}$

Obj = $\begin{bmatrix} 0 & 0 & 2 & 2 & 3 \\ 0 & 0 & 2 & 2 & 3 \\ 1 & 1 & 2 & 2 & 3 \\ 1 & 1 & 3 & 3 & 3 \end{bmatrix}$

RGB
↓
grayscale
↓
thresholding to get b/w
↓
masking to remove noise
↓
Final

connected pixel

↓

obj

---

online

- decision
- action
- decision
- action

use when environment is dynamic (changing)

depth-first

informed

offline

all decisions
all actions
optimal, but time and computation consuming

breadth-first

uninformed

---

informed

knows (or estimates) distance to the goal

use if information is available

A*

---

supervised

labeled training data

use if labels are available

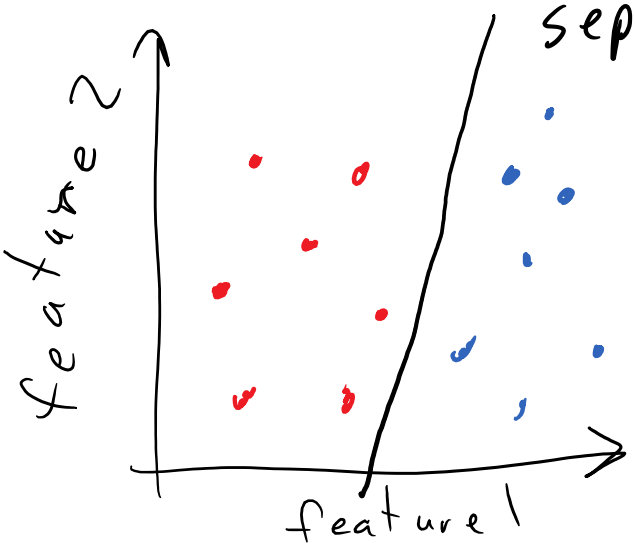
unsupervised

unlabeled training data

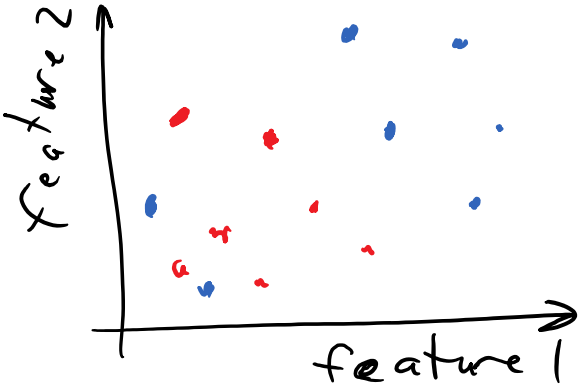
use if labels are unknown

SVM → support v...

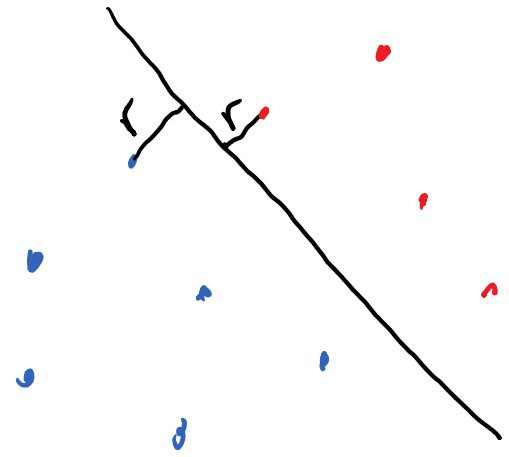
ANN → artificial neural network



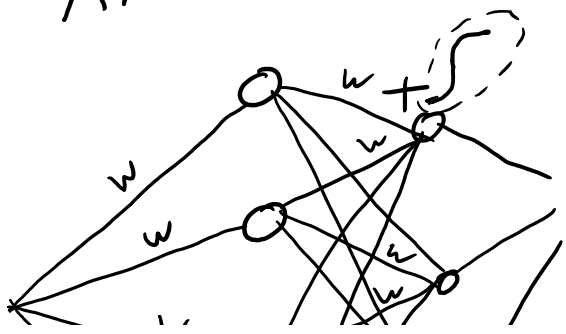
separable → possible to draw line, plane, or hyperplane between classes of data



SVM

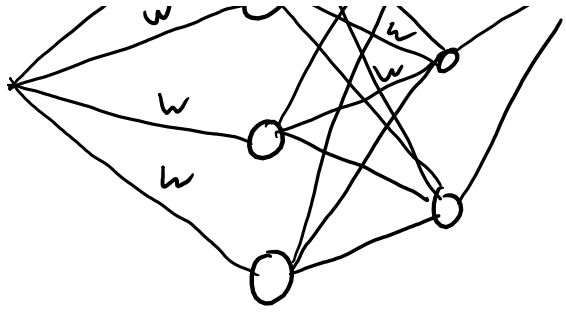


ANN



pro → non-separable data

con → computationally-intensive



↑ layer

---

optical flow

based on masking

pro → can tell direction and speed

con → computationally-intensive

difference

based on subtraction

---

rule 1: has to be possible to get the feature from the raw data

rule 2: useful for increasing separability in the data

rule 3: use the fewest number of features that allows the algorithm to learn the data

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