

It is a complete Jungle of Events



Search Heuristic Logic Planning

Supervised Unsupervised Reinforcement Stochastic...

Neural Nets CNN, RNN, DNN, GAN, ... etc.



semi-supervised learning    overfitting    stochastic gradient descent    SVM    Q learning  
Gaussian processes    deterministic noise    data snooping    learning curves  
distribution-free    linear regression    VC dimension    mixture of experts  
collaborative filtering    nonlinear transformation    sampling bias    neural networks    no free lunch  
decision trees    RBF    training versus testing    noisy targets    Bayesian prior  
active learning    linear models    bias-variance tradeoff    weak learners  
ordinal regression    cross validation    logistic regression    data contamination    hidden Markov models  
ensemble learning    types of learning    perceptrons    graphical models  
exploration versus exploitation    error measures    kernel methods  
is learning feasible?    soft-order constraint  
clustering    regularization    weight decay    Occam's razor    Boltzmann machine

# The Path We Travelled: ROADMAP

## Theory

↓  
 VC-dimension  
 PAC  
 Bias-Variance  
 complexity  
 bayesian  
 (Stochastic)

←  
 Leslie  
 Valiant  
 ←

## Techniques

### Model

↓  
 linear  
 ANN  
 SVM  
 kNN  
 RBF  
 Gaussian Process  
 Graphical Model  
 (Bayes Net)  
 DT  
 CL → Boolean formula  
 ⋮  
 (Tensorflow / Pytorch Library)

### Methods

↓  
 Aggregation  
 (Ensemble)  
 - Bagging/Boosting  
 Regularization  
 validation  
 Input processing  
 (Transform)

$$\phi: X \rightarrow Z$$

↔

## Paradigms

↓  
 supervised  
 unsupervised  
 reinforcement  
 active  
 online

(Neural)  
 ↘ DL  
 YB  
 GA  
 YL

Explainability  
 Fairness  
 Biasness  
 Ethica

- ⇒ Deep Learning
- ⇒ Reinforcement Learning
- ⇒ Stochastic Process
- ⇒ Advanced ML }  
 ⇒ Statistical ML }
- ⇒ AI in Ethica

JMLR, ICML, ICLR, PAMI, CVPR, ...