

Pattern Recognition

VS

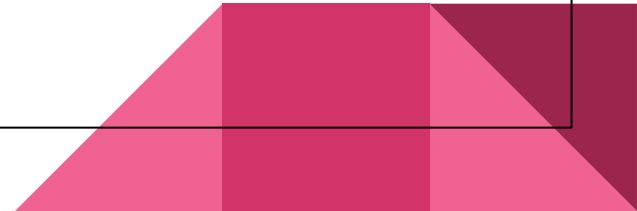
Machine Learning

VS

Deep Learning

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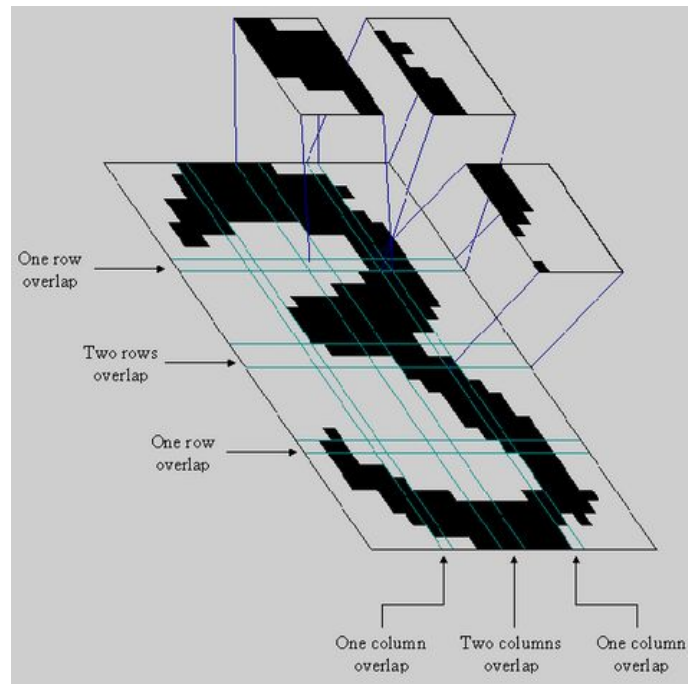
The Three schools of thought

- Pattern recognition (Outdated)
- Machine Learning (Current trend)
- Deep learning (New edge)

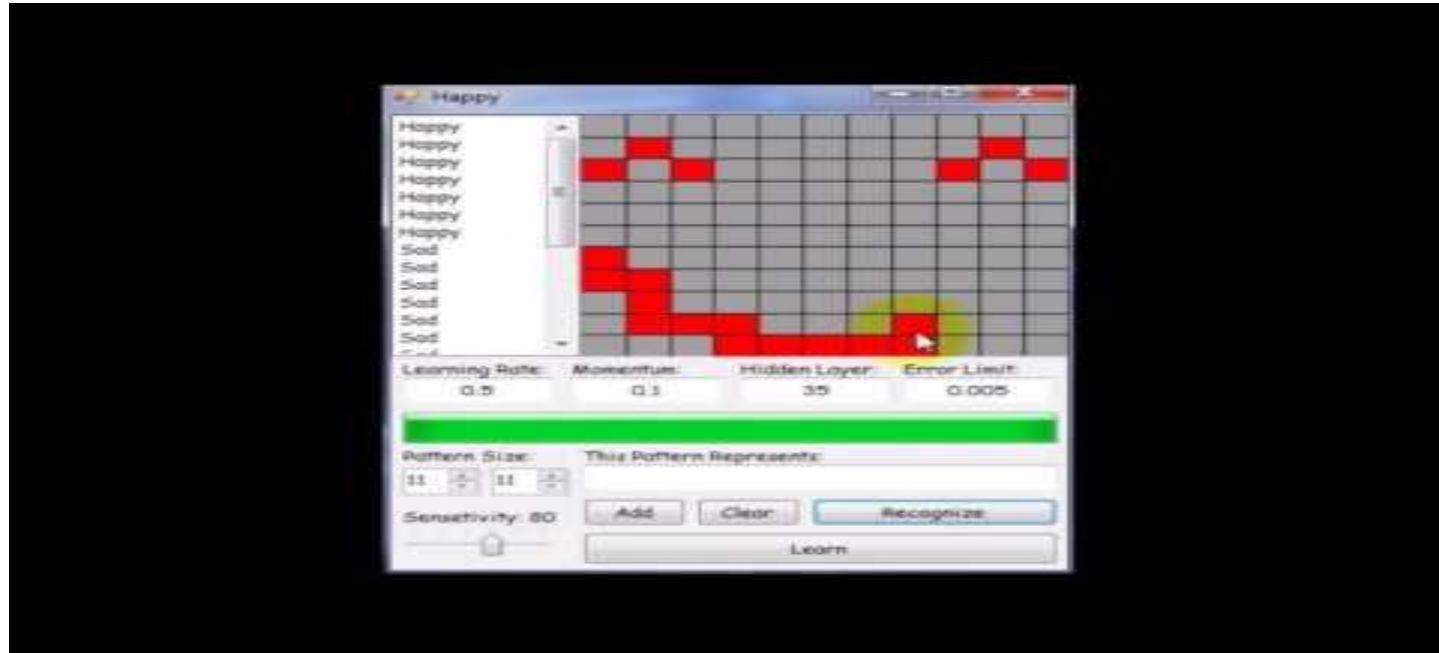


Pattern recognition

- Popular in the 70s and 80s
- Just think "3" vs "B" and "3" vs "8"
- Algorithm applies filters to an image
- Apply morphological operators
- Decision trees, heuristics, quadratic discriminant analysis

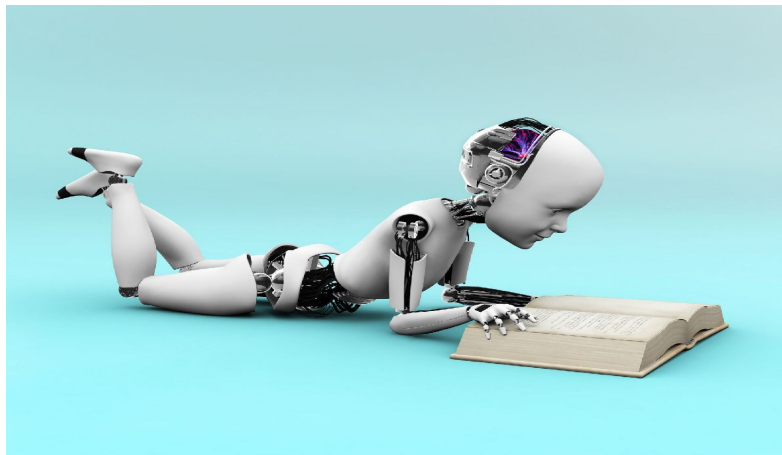


Pattern recognition

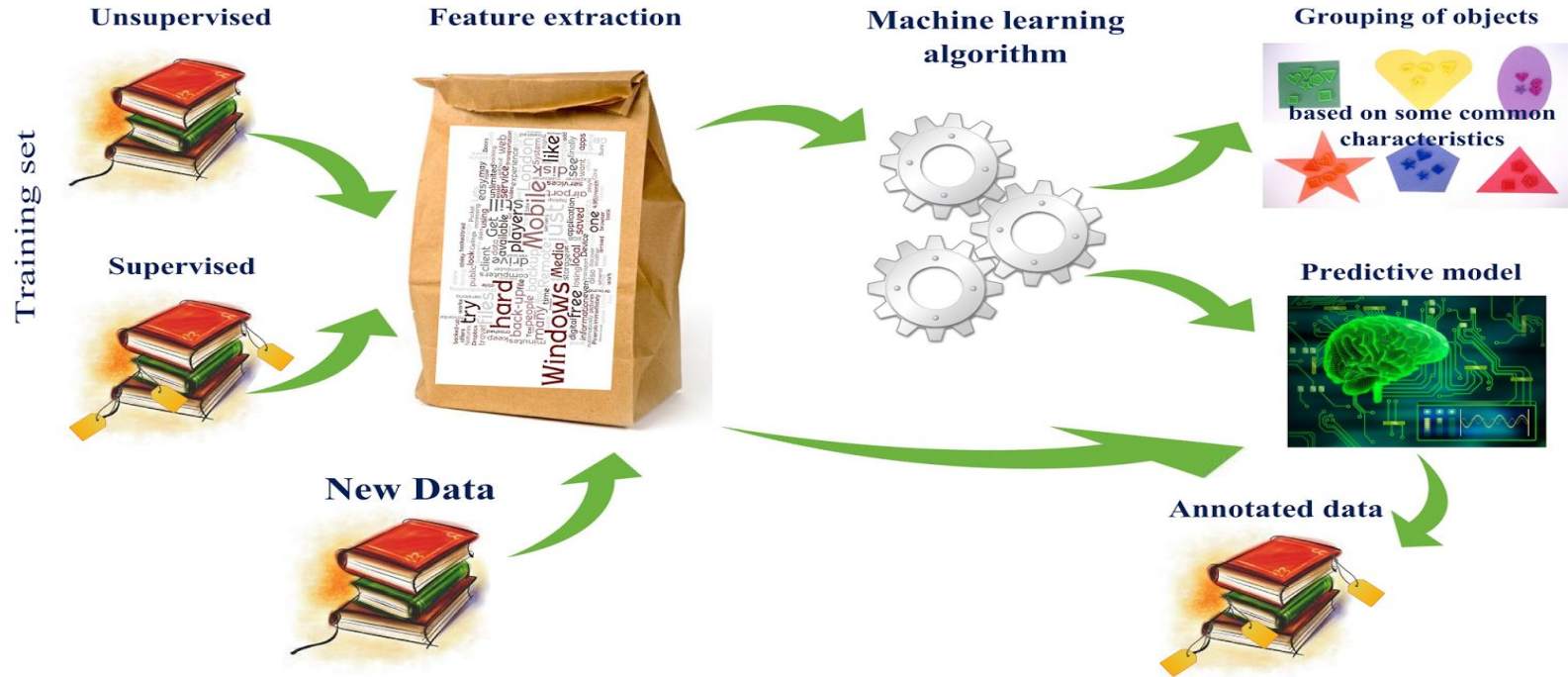


Machine Learning

- Early 90s
- Replace an expert with data
- Must do some work after it is given data
- Machine Learning to Robotics (reinforcement learning, manipulation, motion planning, grasping)



Machine learning workflow



Machine learning in Tesla Model S

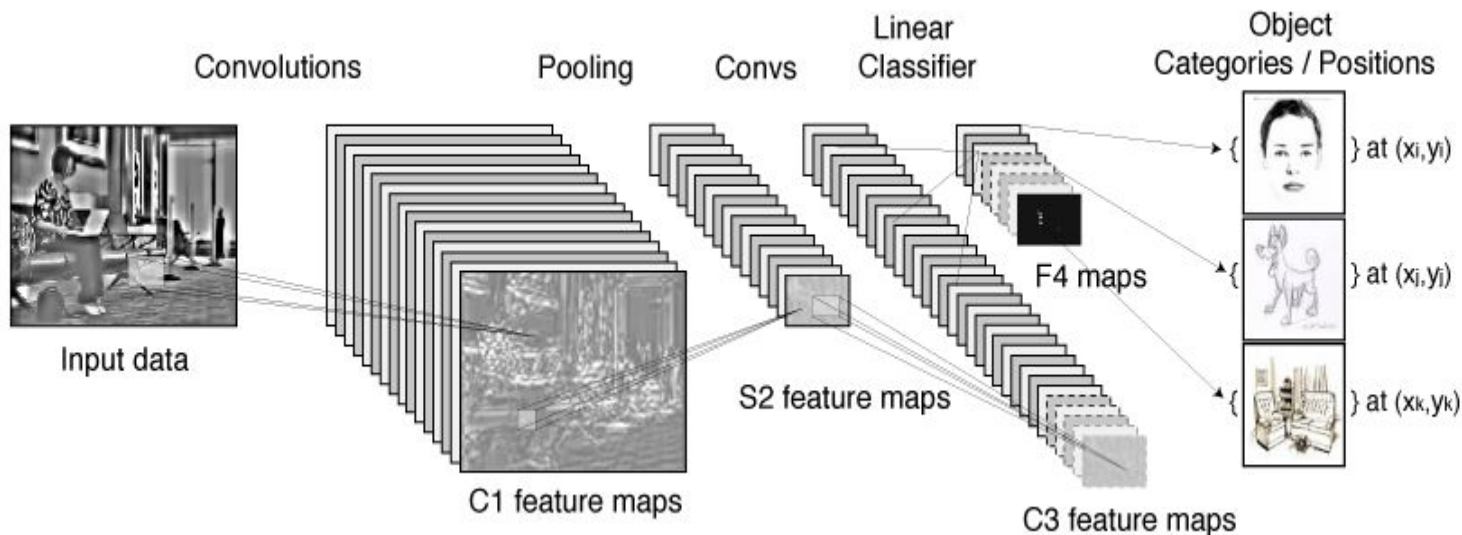


Tweet from Tesla Motors



Deep Learning

- large scale image recognition tasks Convolutional Neural Nets
- use data fill in the missing parameters



Trends

