
MACHINE LEARNING

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About Me

- Pursuing my Bachelors degree from CET in the field of Information Technology
- Areas of Interest:
 - Natural Language Understanding
 - Deep Neural networks
 - Reinforcement Learning
 - Image Processing
 - Exploratory Data Analysis



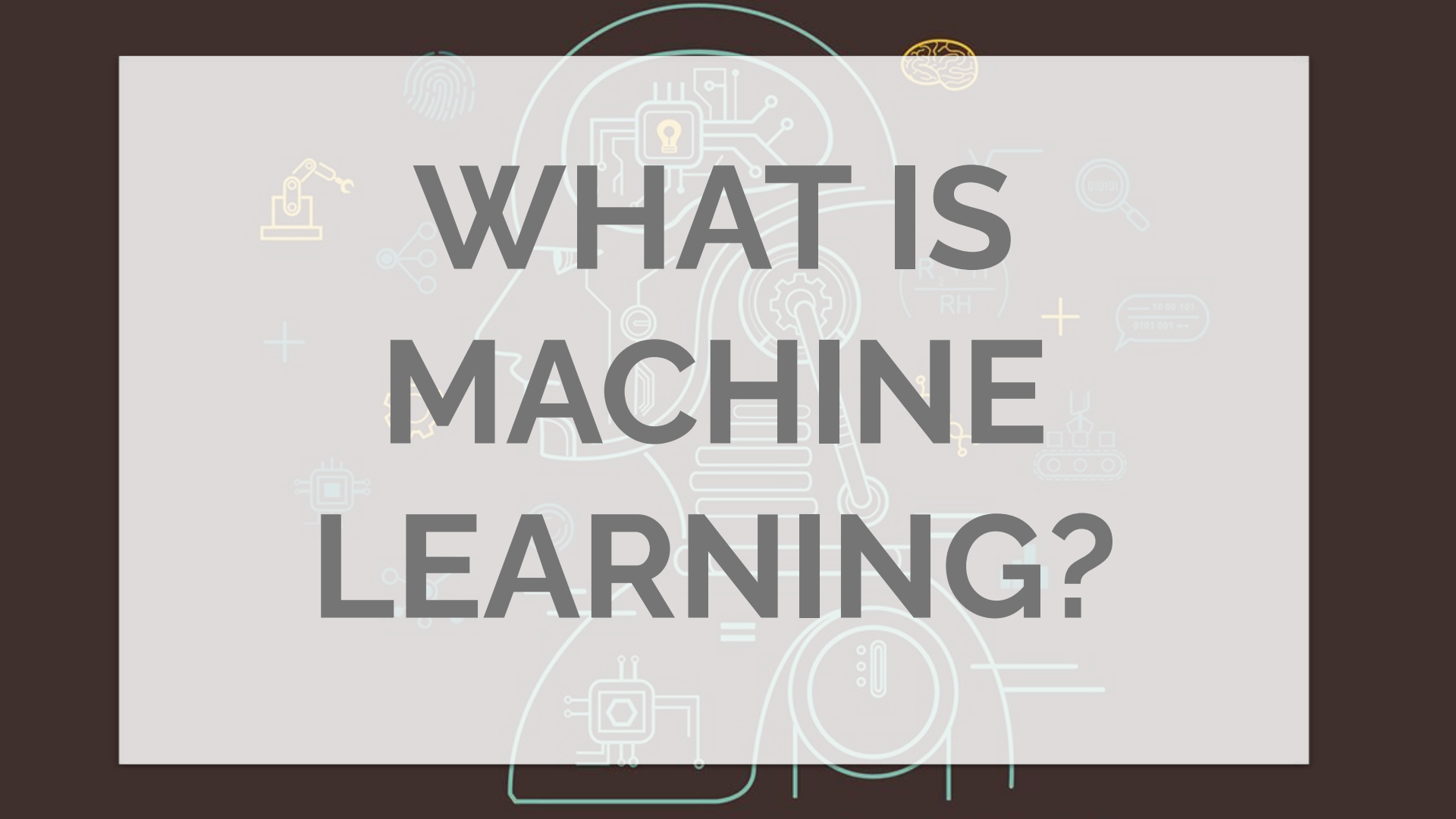
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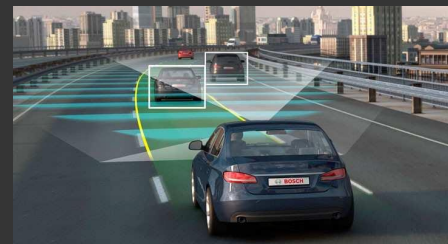
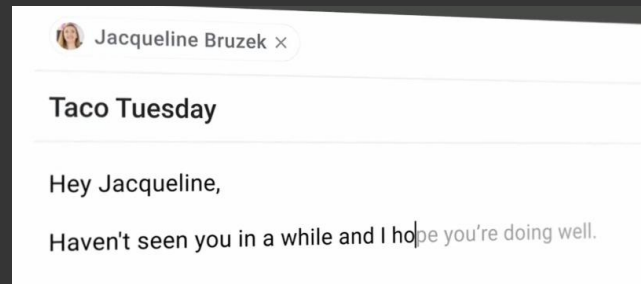
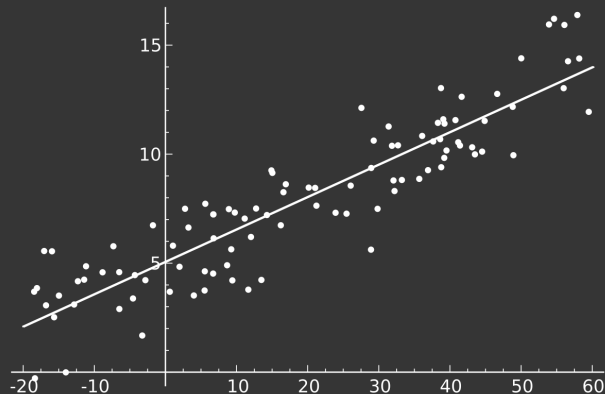
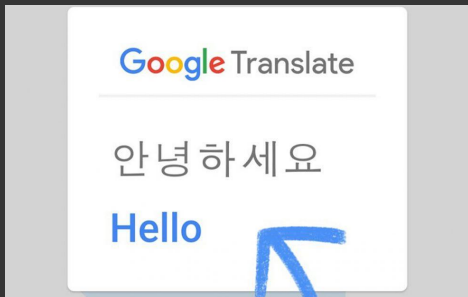
Companies I have Collaborated with



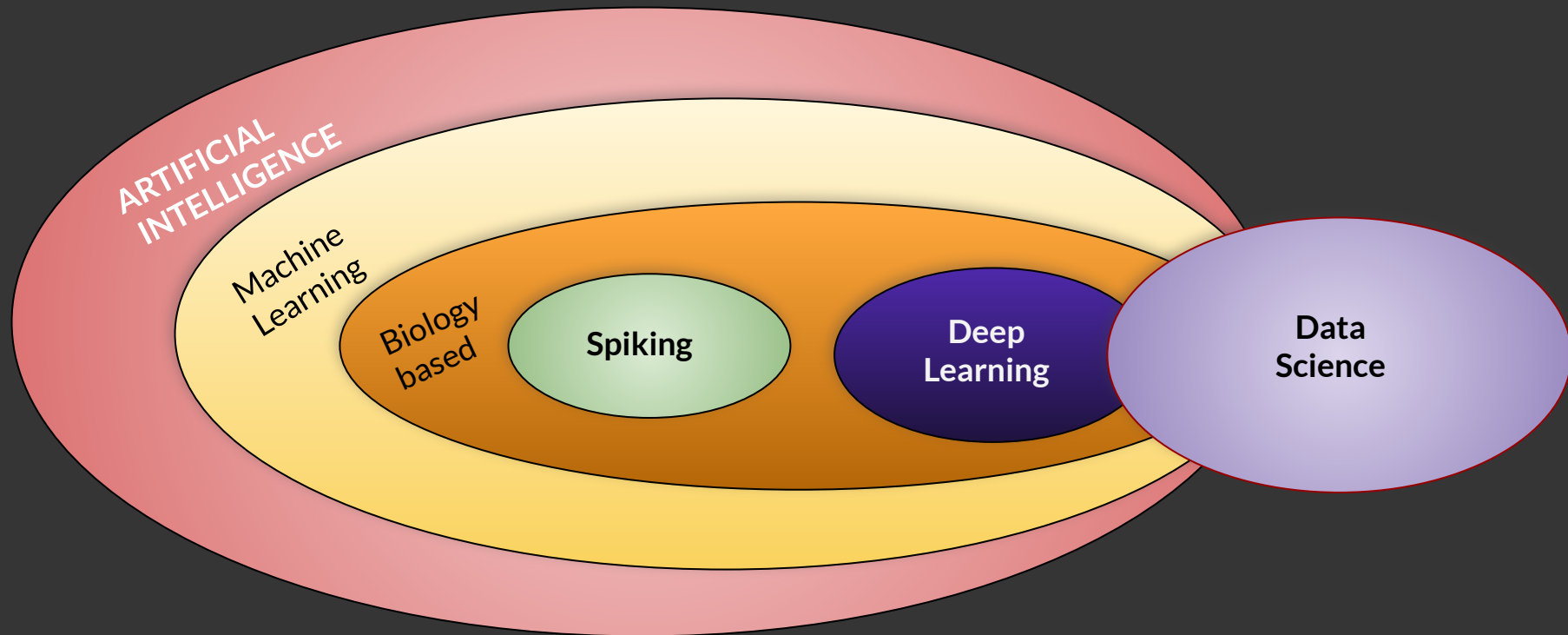


WHAT IS MACHINE LEARNING?

What do you think it is?

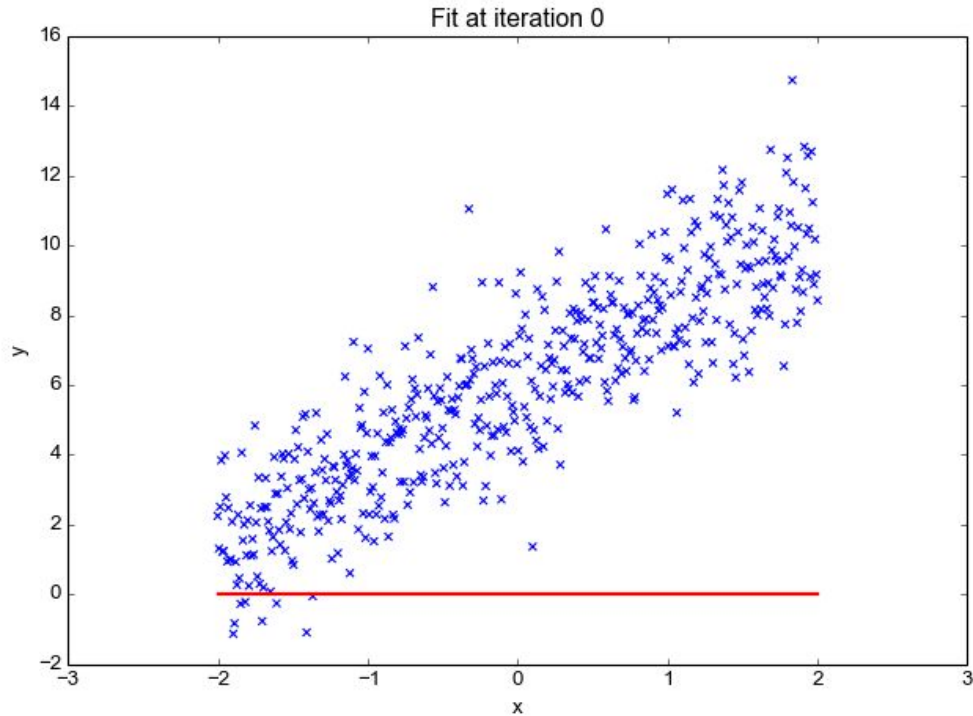


Understanding AI



Machine Learning Algorithms *(sample)*

	<u>Unsupervised</u>	<u>Supervised</u>
<u>Continuous</u>	<ul style="list-style-type: none">• Clustering & Dimensionality Reduction<ul style="list-style-type: none">○ SVD○ PCA○ K-means	<ul style="list-style-type: none">• Regression<ul style="list-style-type: none">○ Linear○ Polynomial• Decision Trees• Random Forests
<u>Categorical</u>	<ul style="list-style-type: none">• Association Analysis<ul style="list-style-type: none">○ Apriori○ FP-Growth• Hidden Markov Model	<ul style="list-style-type: none">• Classification<ul style="list-style-type: none">○ KNN○ Trees○ Logistic Regression○ Naive-Bayes○ SVM



LINEAR REGRESSION

Dependent Variable

Population Y intercept

Population Slope Coefficient

Independent Variable

Random Error term

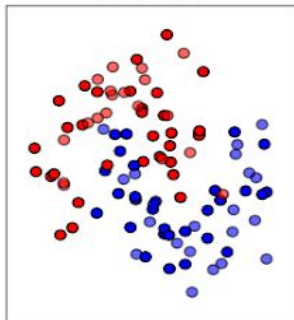
$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

Linear component

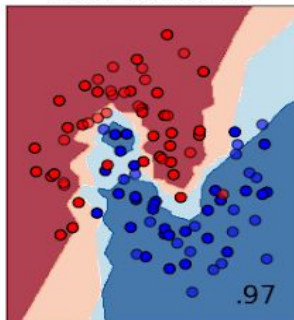
Random Error component

HOW DO **MACHINES** SEE THE WORLD?

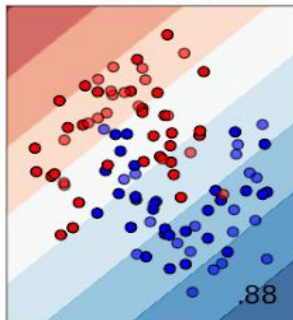
Input data



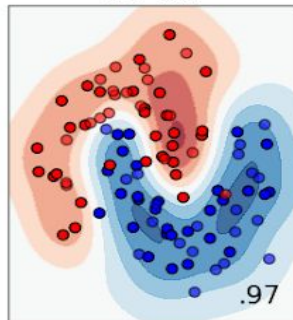
Nearest Neighbors



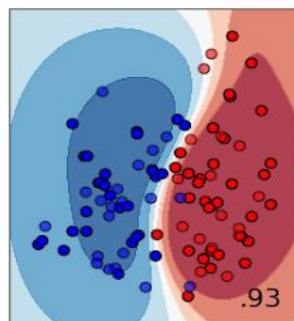
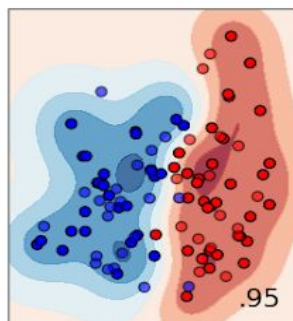
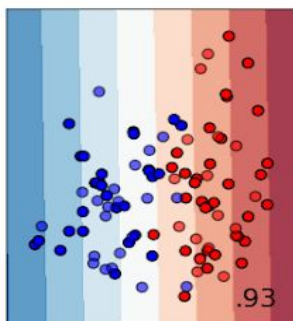
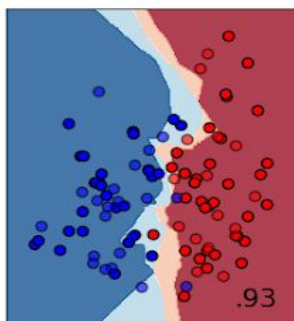
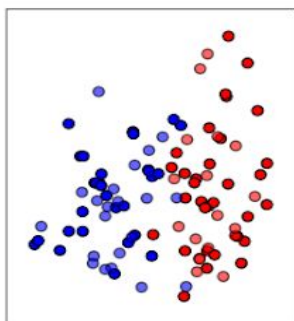
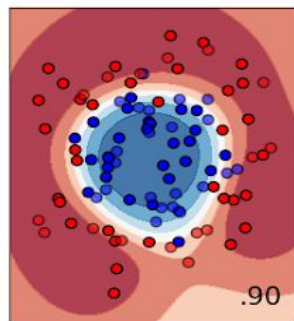
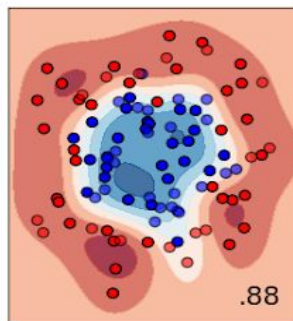
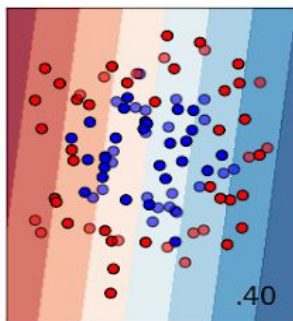
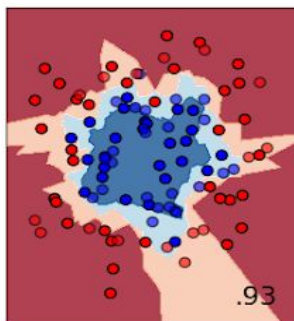
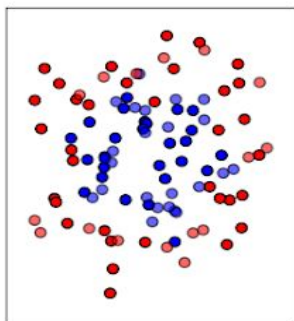
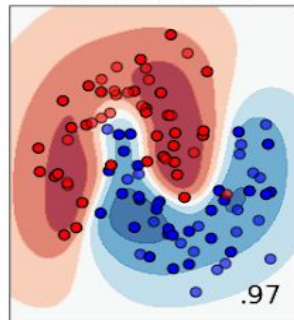
Linear SVM

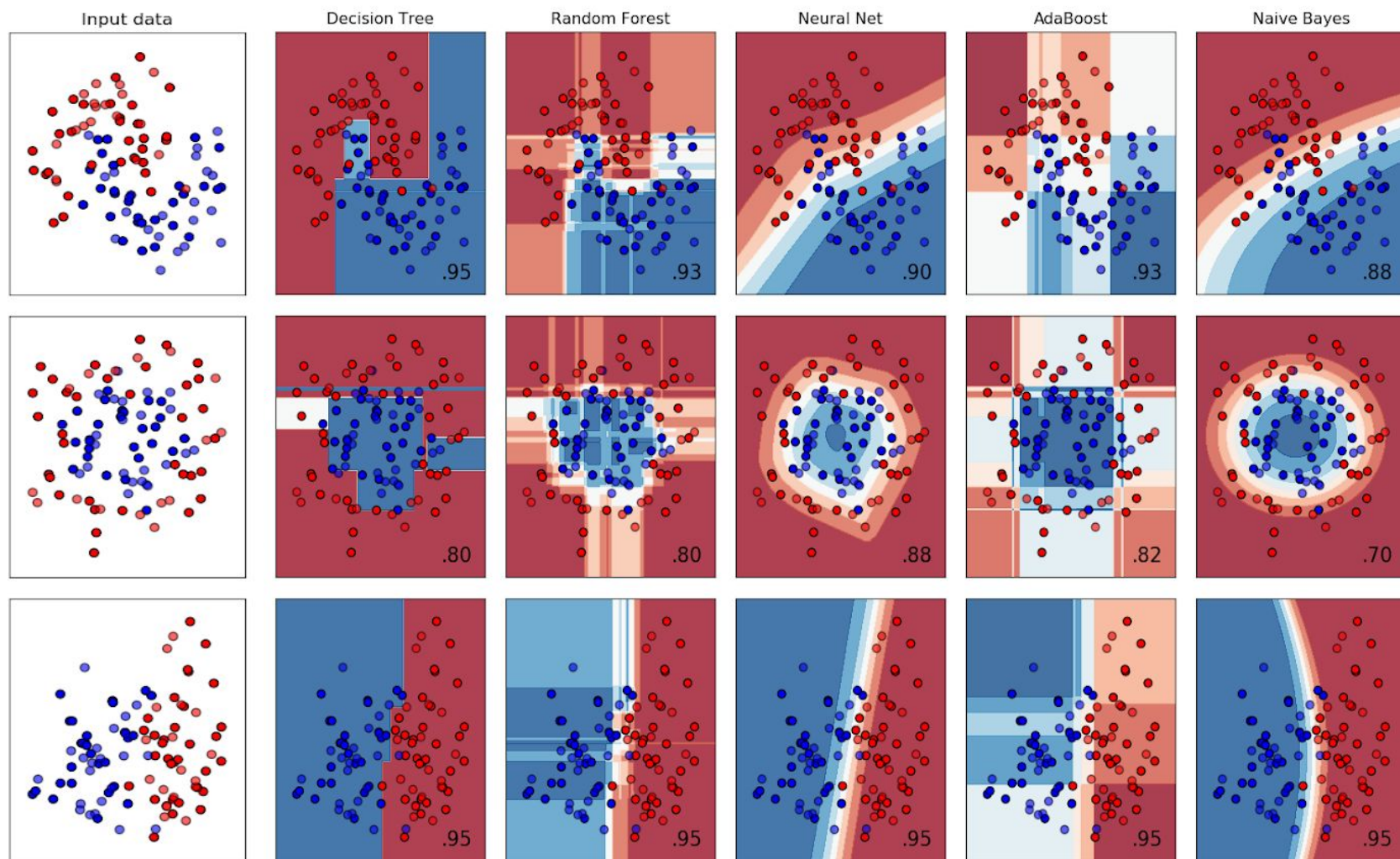


RBF SVM



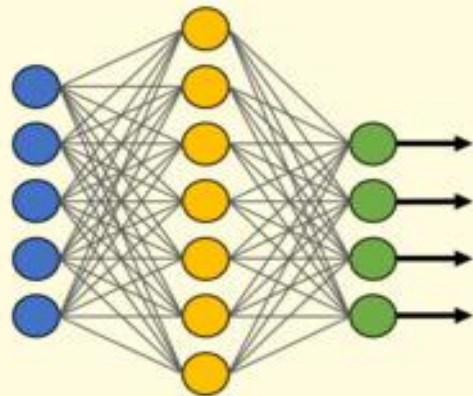
Gaussian Process





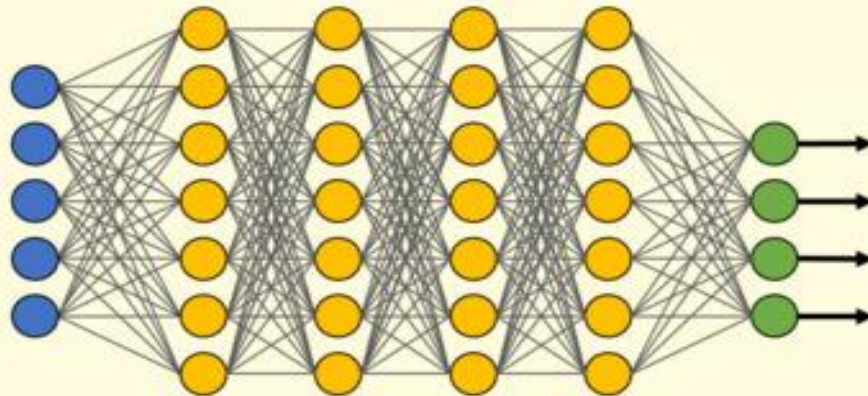
DEEP LEARNING is a class of machine learning algorithms that use multiple layers to progressively extract higher level features from raw input.

Simple Neural Network



● Input Layer

Deep Learning Neural Network



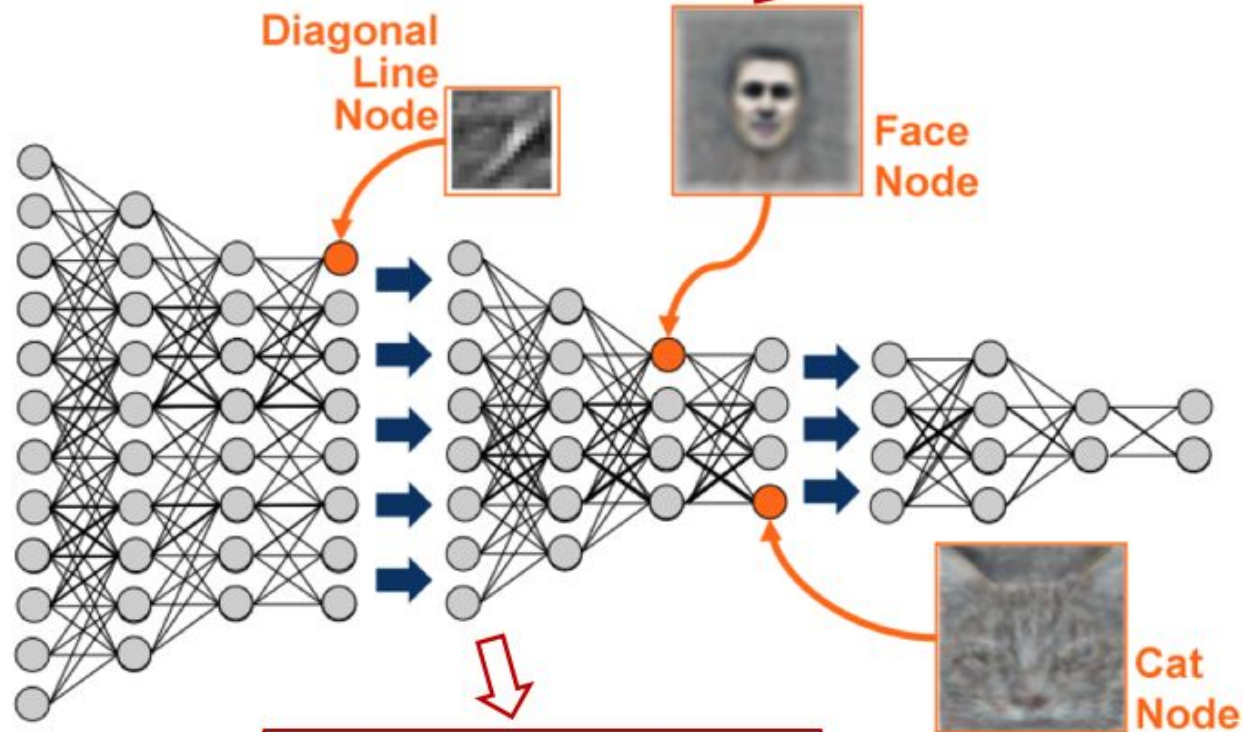
● Hidden Layer

● Output Layer

Lots of data



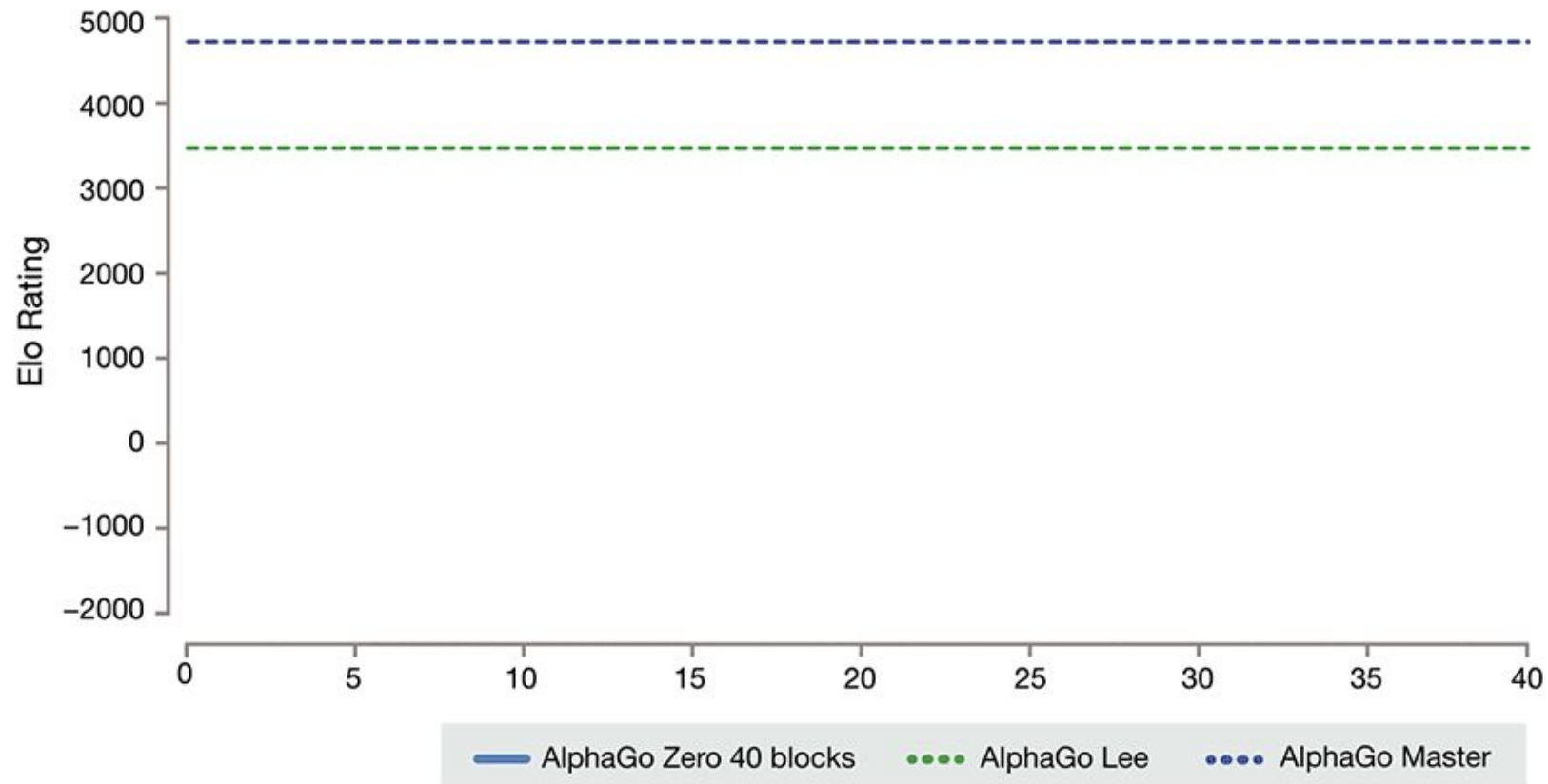
Data representations (feature hierarchy)



Deep & Large Networks



How far have we come?



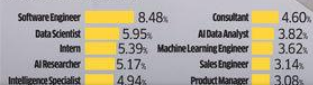


In 2020, AI will create
2.3 million new jobs while
eliminating 1.8 million jobs.



JOBS THAT ARE IN HIGH DEMAND

ACROSS DIFFERENT COUNTRIES, THERE WERE 10 JOBS THAT APPEARED MORE FREQUENTLY ON SEARCHES



Job Trends from Indeed.com
— "Data Scientist"



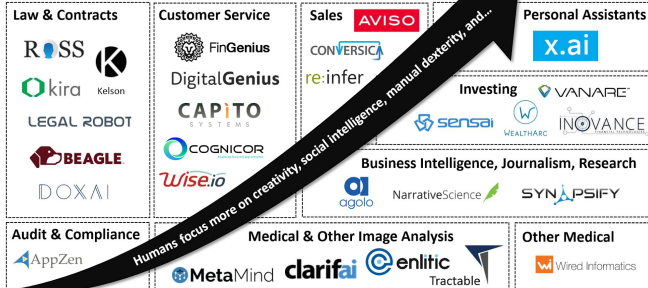
Artificial Intelligence Startups

Augmenting knowledge work using AI

25% of all job-based tasks will be automated by 2019 - Forrester Research

Many experts believe that by 2050 machines will have had human level intelligence

eds of startups are using AI to augment knowledge work



More: <https://www.ventureradar.com/>

Why AI?



AI ENGINEERS

An artificial intelligence programmer helps develop operating software that can be used for robots, artificial intelligence programs or other artificial intelligence applications. They may work closely with electrical engineers or robotics engineers and others in order to produce systems that utilize artificial intelligence.

8,000
2018 Jobs

₹ 20,00,000*
Median salary

AI engineering jobs can be found in the following cities (data - per quarter).



- 21.5% Bangalore
- 29.7% Delhi
- 12.8% Pune
- 12.7% Chennai
- 10.7% Hyderabad
- 12.7% Mumbai

*years of experience affects the salary, which can be as high as Rs 30,00,000 per year.

Skills required

- > Math skills including understanding of probability, statistics and calculus concepts
- > Programming and data Engineering skills including data extraction, processing and analysis

*Top hiring companies

Intel, Amazon India, Accenture India, Wipro Digital, Infosys

Tools Of The A.I. Trade





**THANK
YOU**