

# ARTIFICIAL INTELLIGENCE



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**BLUE RIDGE**  
FOR A MORE FORESEEABLE FUTURE



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# ARE MACHINES LEARNING?



# RECENT INTEREST HAS BEEN ON THE UPTICK IN THE PAST FEW YEARS

## Machine Learning

## Artificial Intelligence

## Deep Learning



# HISTORY

AI involves machines that can perform tasks that are characteristic of human intelligence

Approach to achieving AI – the ability to learn without being explicitly programmed

Approach to ML – application of Neural Networks

## ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement



Deep Blue  
IBM Watson – Jeopardy!  
Self Driving Cars

## MACHINE LEARNING

Machine learning begins to flourish



Netflix Prize – Recommender  
Spam Classification  
Facebook – Newsfeed –

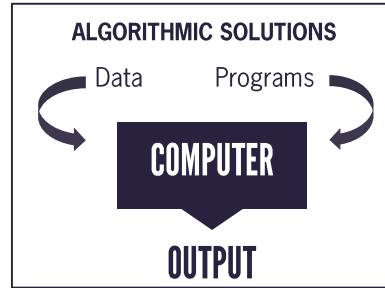
## DEEP LEARNING

Deep learning breakthroughs drive AI boom



Speech Recognition  
Image Recognition

# DIFFERENT FROM THE TRADITIONAL SCIENCE

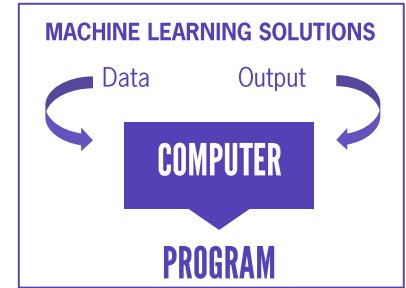


## White-box modeling

- Simpler computation
- Emphasis on introspection, form
- Correct model

Humans formulate the relationships between variables

TRADITIONAL STATISTICS



## Black-box modeling

- High computational complexity
- Emphasis on speed and quality of prediction
- Performant model

Algorithms formulate the relationships between variables

MACHINE LEARNING

## ACCENTURE

- 70% of executives said they are significantly **increasing investments in AI compared with two years ago.**
- One of the most obvious places to start is the **supply chain**



## GARTNER

- Supply chain organizations expected the level of **machine automation** in their supply chain processes to **double in the next five years**



## FORRESTER

- Amazon saw 55% of sales come from **personal recommendations made by machine learning algorithms**



## McKINSEY

- U.S. retailer supply chain operations who have **adopted data and analytics** have seen up to a 19% increase in operating margin over the last five years



# WHAT INDUSTRIES SAY NOW



# WHY NOW?

## MACHINE LEARNING & ARTIFICIAL INTELLIGENCE

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### ALGORITHMS

- Regression (Linear, Logistic)
- Classifier (Hierarchical, Naïve Bayes)
- Feature Engineering
- Ensemble (Random Forest, Boosting)
- Rule based (Association)
- Clustering Neural Networks
- Graph theory

### COMPUTING POWER

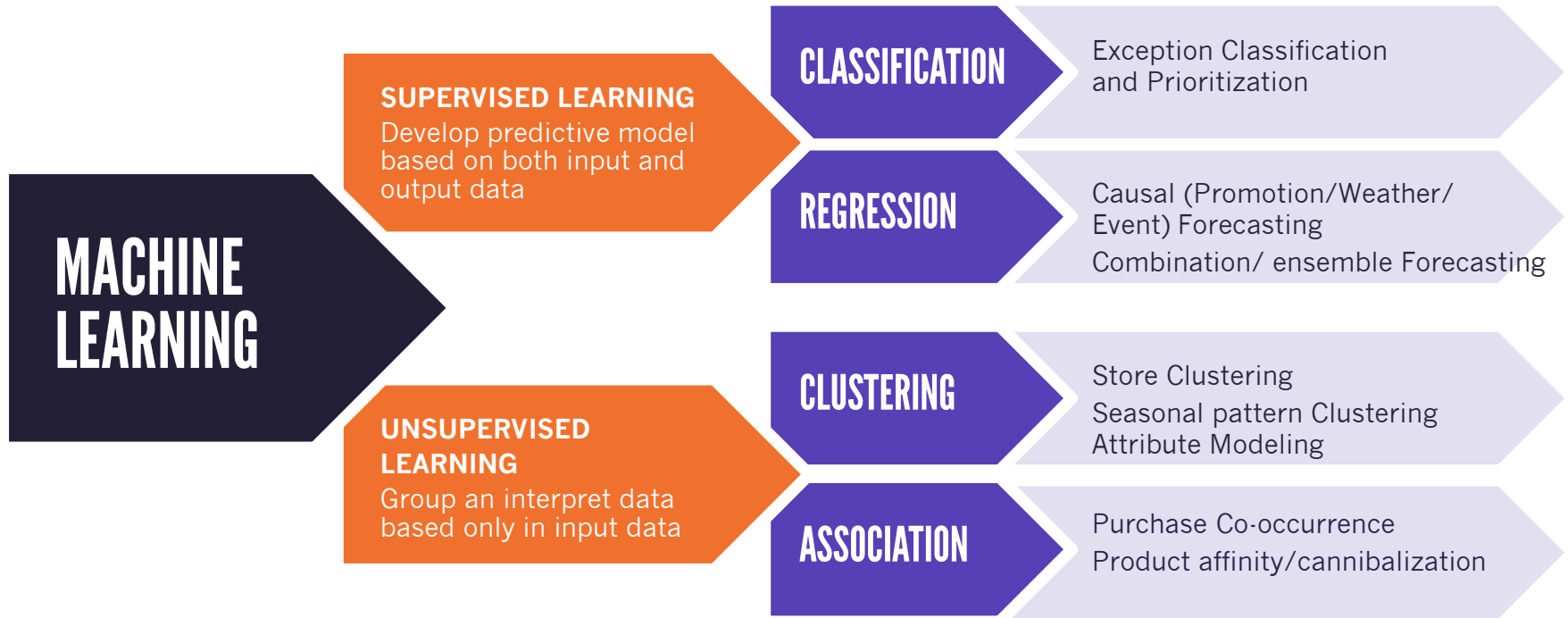
- Cloud Storage
- Cloud Computing GPU Processing
- Big Data tools (Hadoop/Spark/Kafka)

### RICH DATA

- Big Data (Volume/variety/variability)
- Data Anomalies
- Availability



# TYPES AND USE CASES



- **AI/Machine learning is not monolithic**
  - Family of lots of learning types & techniques
  - Remember: no one algorithm works best for every problem
- **Scope of ML applications is huge and growing within SCP context**
  - Proven use cases
    - Demand prediction (Base and causal)
    - Customer analytics
    - Predicting demand trends
    - Inventory management based on insights gleaned from demand and performance analytics
- **Start where there is good amount of data and expand as you gain confidence**

# TAKE-AWAYS

