# What is Machine Learning

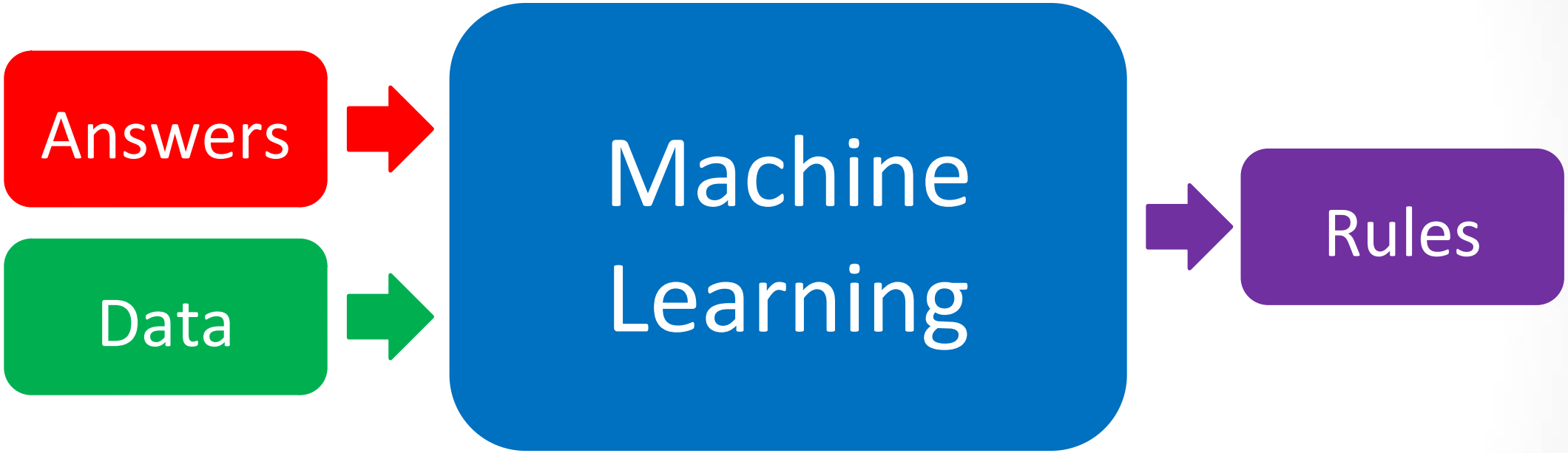
# Machine Learning

- The process of teaching a computer system how to make accurate predictions when fed data.

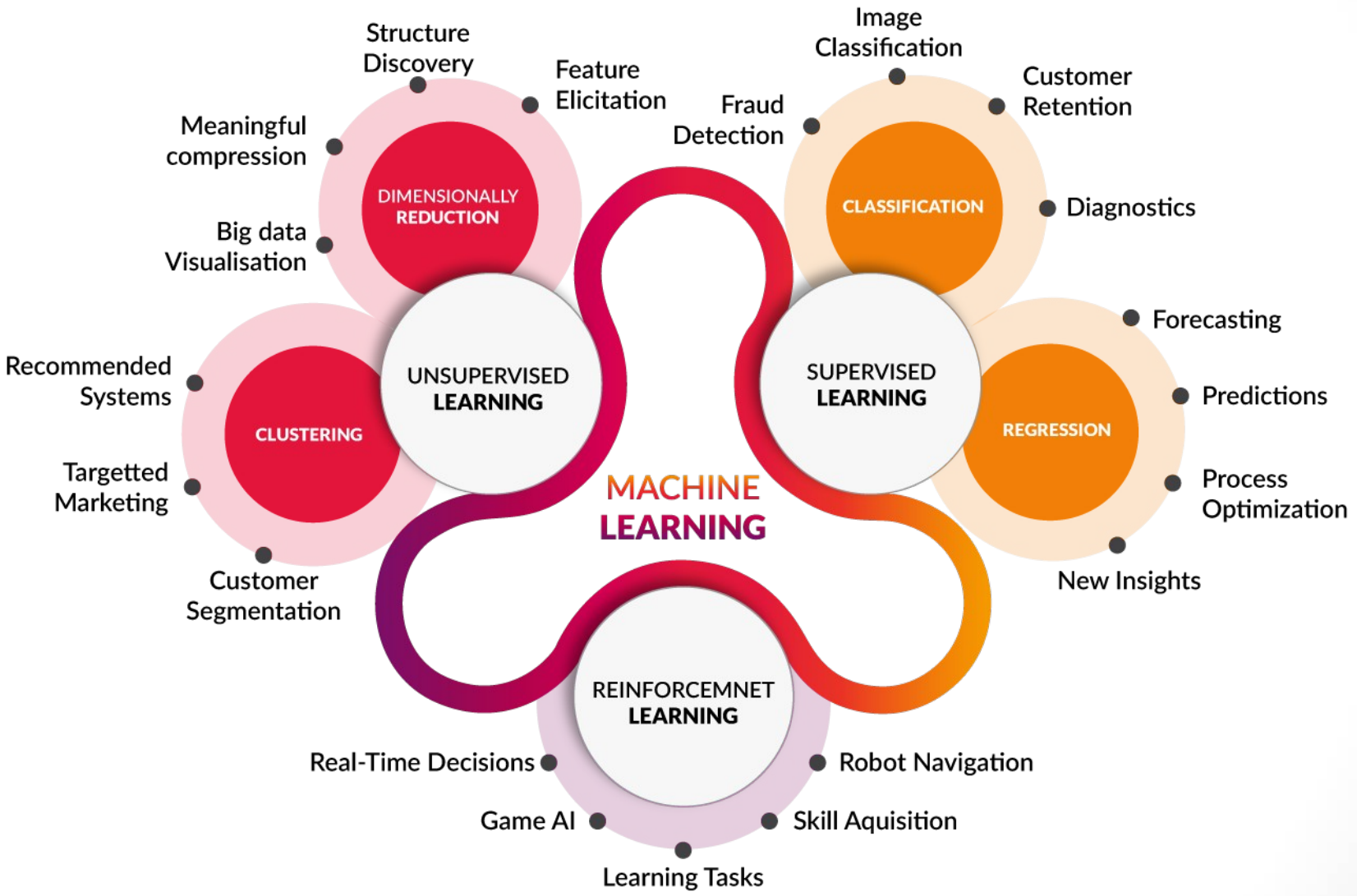
- An application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed

# Traditional Programming
# vs
# Machine Learning


Rules
Data
Traditional Programming
Answers


Answers
Data
Machine Learning
Rules

# Types of Machine Learning



# Steps Involved in Machine Learning

1. Data Preprocessing
2. Model Selection
3. Model Fitting
4. Testing of Model / Model Validations
5. Deployement of the Model

# Applications of Machine Learning

*Agriculture*
*Anatomy*
*Adaptive websites*
*Affective computing*
*Banking*
*Bioinformatics*
*Brain–machine interfaces*
*Cheminformatics*
*Citizen science*
*Computer networks*
*Computer vision*
*Credit-card fraud detection*
*Data quality*
*DNA sequence classification*
*Economics*
*Financial market analysis*
*General game playing*
*Handwriting recognition*
*Information retrieval*
*Insurance*
*Internet fraud detection*
*Linguistics*
*Machine learning control*
*Machine perception*
*Machine translation*
*Marketing*
*Medical diagnosis*
*Natural language processing*
*Natural language understanding*
*Online advertising*
*Optimization*
*Recommender systems*
*Robot locomotion*
*Search engines*
*Sentiment analysis*
*Sequence mining*
*Software engineering*
*Speech recognition*
*Structural health monitoring*
*Syntactic pattern recognition*
*Telecommunication*
*Theorem proving*
*Time series forecasting*
*User behavior analytics*

# Limitations

- Lack of (suitable) data
- Lack of access to the data
- Data bias
- Privacy problems
- Badly chosen tasks and algorithms
- Wrong tools and people
- Lack of resources
- Evaluation problems

# In news

- In 2018, a self-driving car from Uber failed to detect a pedestrian, who was killed after a collision.

- Attempts to use machine learning in healthcare with the IBM Watson system failed to deliver even after years of time and billions of investment.