Machine Learning in Astronomy

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UC Riverside

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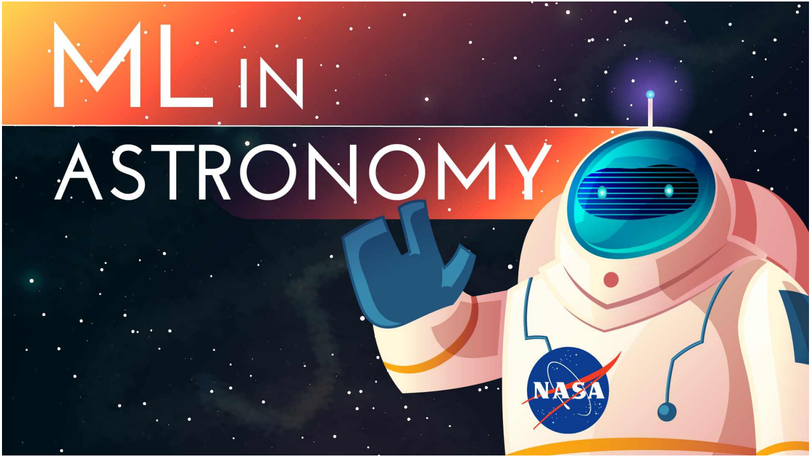

credit: 365datascience.com

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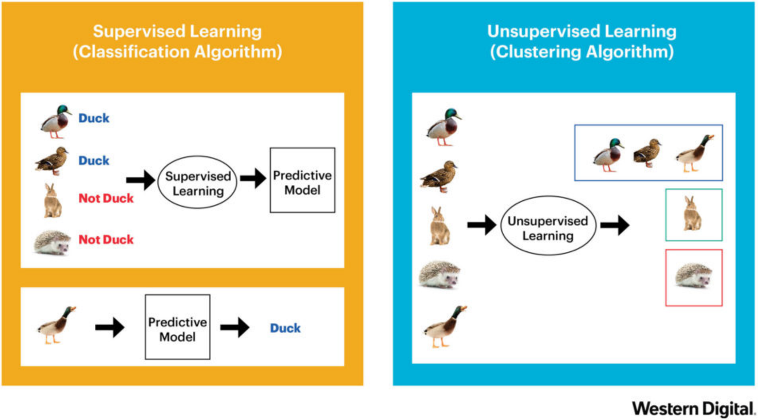
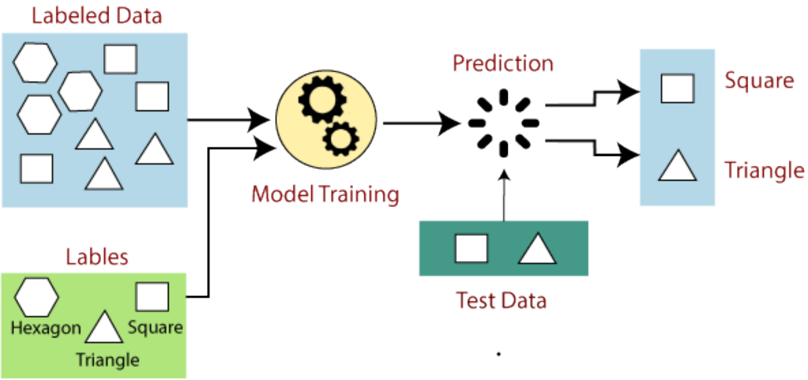
- How to implement **ML** in astronomy?
- What are the pitfalls of **ML**?


Supervised Learning
(Classification Algorithm)
Duck
Duck
Not Duck
Not Duck
Supervised Learning
Predictive Model
Predictive Model
Duck
Unsupervised Learning
(Clustering Algorithm)
Unsupervised Learning
Western Digital.

How supervised learning works?



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- Validation:
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  2. Select the optimum hyper-parameters
- Testing:
  1. Test learned model by an unseen part of the data-set.
  2. Select the best model and use it for predictions.

Supervised learning methods in astronomy?

- Classification: discrete targets
  a. Spectrum: quasar, star, galaxy, supernova, ...

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- DBSCAN:
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- OPTICS:

Deep/Shallow Artificial Neural Networks

How unsupervised learning works?

Clustering

- KMeans:

Clustering

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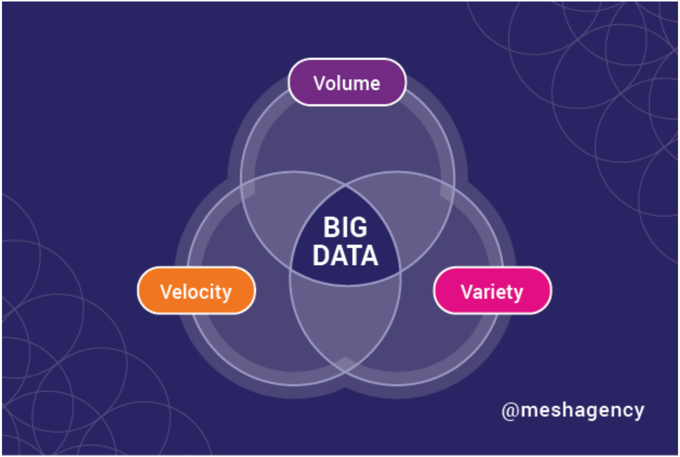
Volume
BIG DATA
Velocity
Variety
@meshagency

TMT

JWST

Sloan Digital Sky Server

Zwicky Transient Facility

Gaia

DESI

Square Kilometer Array

text

text