Part I.
What is Machine Learning?


Input
Rules
Traditional Programming
Output

Elevator Algorithm

Button Inputs

Find and move
to desired floor

Elevator moves
to desired floor

Dog Detector

Dog Photo

Find and isolates features unique to a dog

Dog? (Y/N)

Here's a better way to convert dog ...
sciencemag.org

The Science-Backed Benefits of Being a ...
greatergood.berkeley.edu

How dogs contribute to your health and ...
medicalnewstoday.com

Dogs caught coronavirus from their ...
nature.com

How to make your dog feel comfortable ...
humanesociety.org

The 25 Cutest Dog Breeds - Most ...
goodhousekeeping.com

The Best Dogs of BBC Earth | Top 5 ...
youtube.com

How to Keep Your Dog Cool in the Summ...
pets.webmd.com

Dogs | Healthy Pets, Healthy People | CDC
cdc.gov

How canines capture your heart ...
theguardian.com

Make your Dog your Best Friend ...
helpguide.org

20 must-have products for new dog owners
usatoday.com

These Are the Most Popular Dog ...
travelandleisure.com

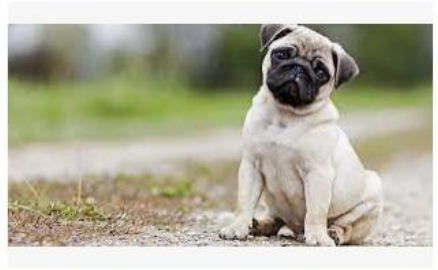
45 Best Large Dog Breeds - Top ...
goodhousekeeping.com

9 Reasons to Own a Dog
businessinsider.com

Most Popular Breeds – American Kennel Club
akc.org

Dog, facts and photos
nationalgeographic.com

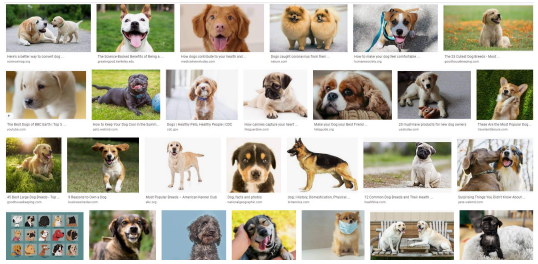
dog | History, Domestication, Physical ...
britannica.com



12 Common Dog Breeds and Their Health ...
healthline.com

Surprising Things You Didn't Know About ...
pets.webmd.com


Sample Input
Output
Machine Learning
Rules



[1,1,1,1,1,1,1 ...]

[0,0,0,0,0,0...]

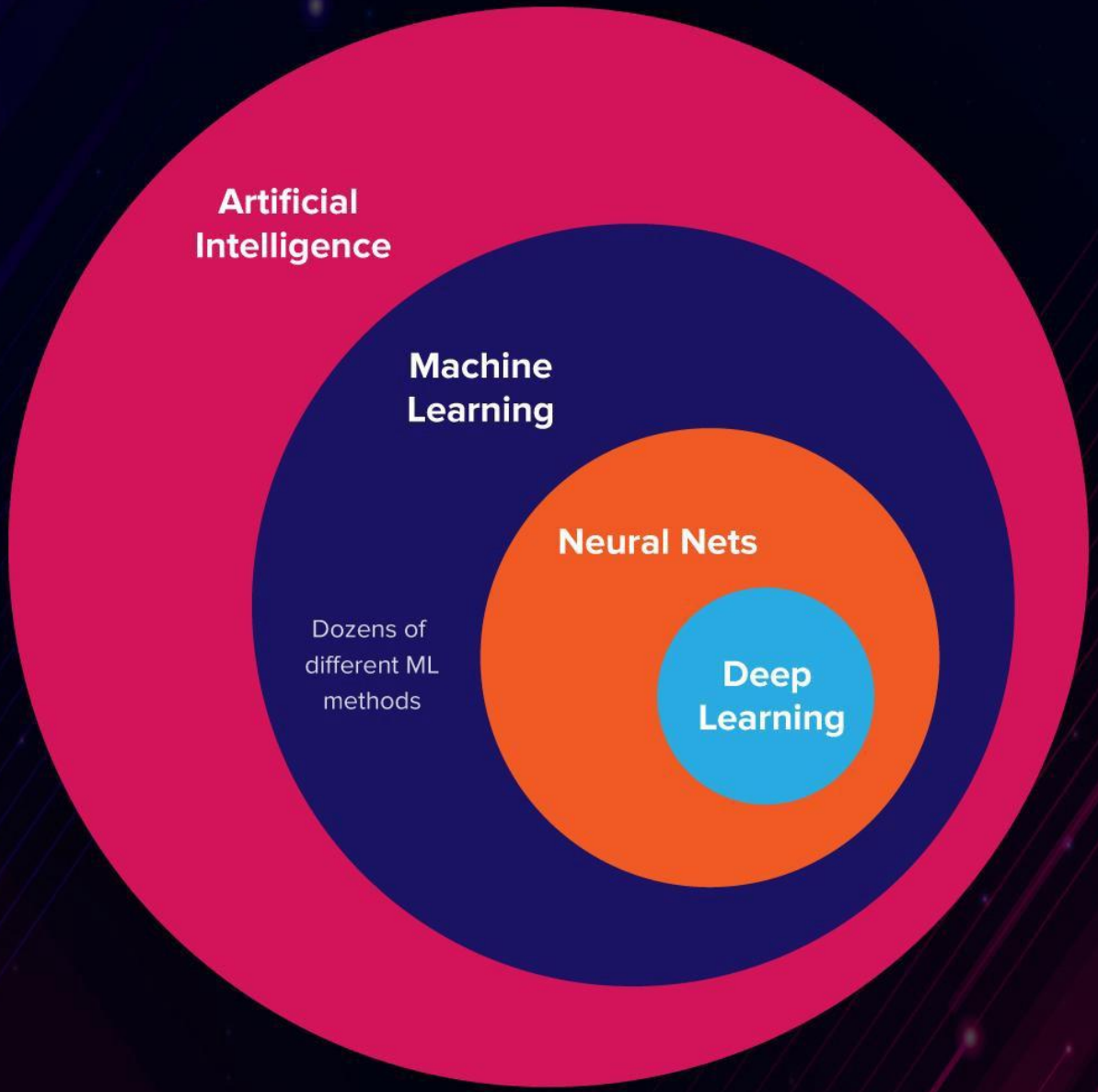
Machine Learning

~~Rules~~ Model


Actual Input
Trained Model
Machine Learning Application
Output

Machine Learning Categories

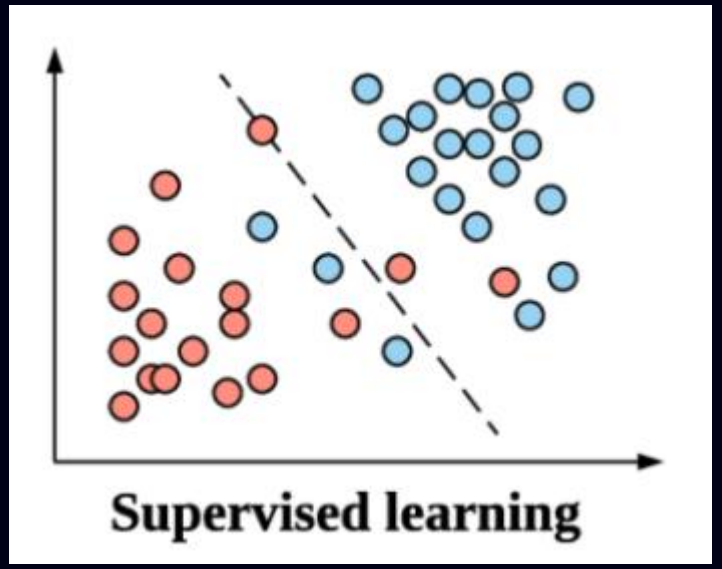
Artificial Intelligence
vs
Machine Learning
vs
Deep Learning



Supervised Learning vs **Unsupervised Learning**

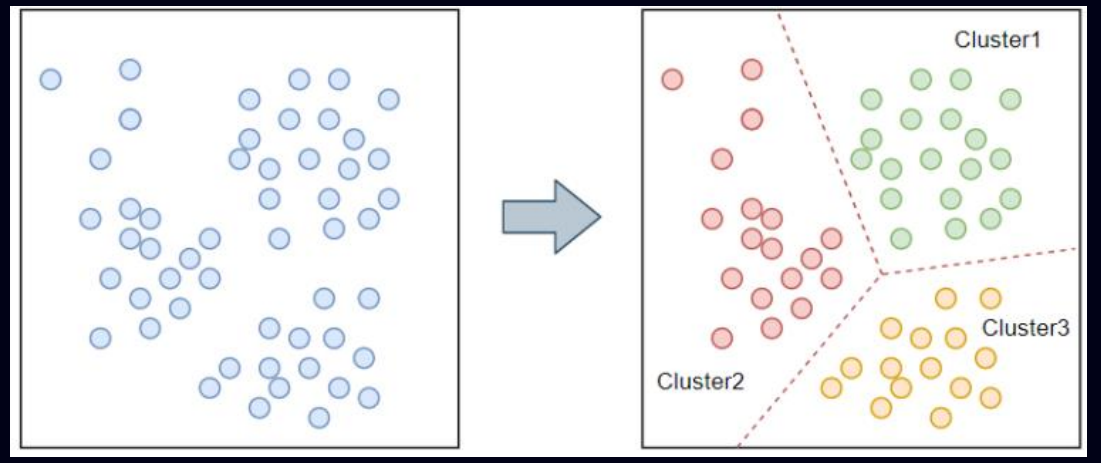
Supervised

Model is trained in labelled data



Unsupervised

Unlabelled data is given, model is tasked to figure out specific classes



Supervised Learning Types

Regression vs **Classification**

Regression

Predicts continuous values

Ex: Estimate the **price** of a house given floor space in sqm.

Classification

Predicts distinct classes (Y or N, 1 or 0)

Ex: Given size of tumor, classify if **benign or malignant**

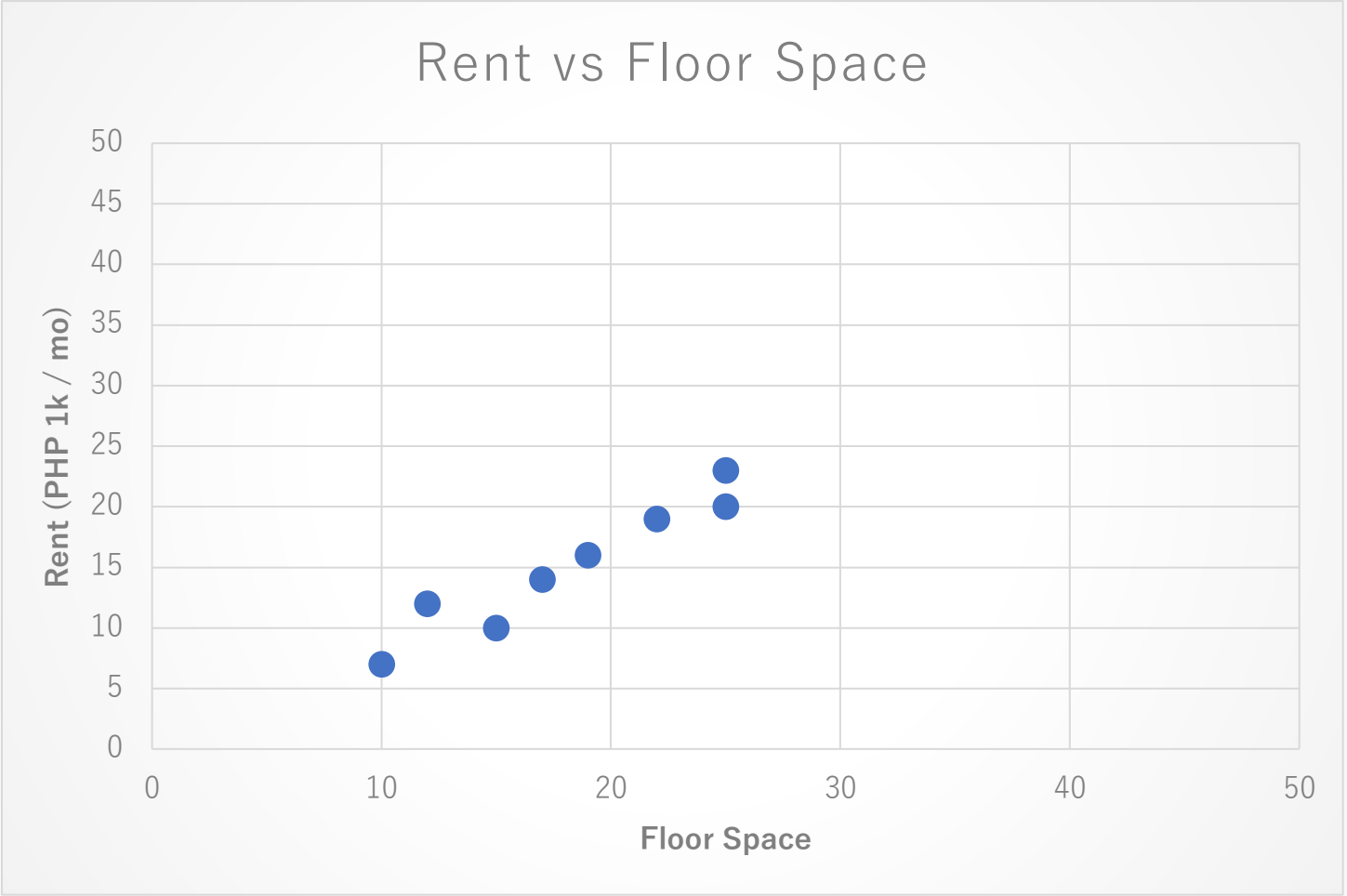
Part II.
Machine Learning Examples

Regression Example

Floor Space (sqm)	Rent (1k PHP /mo)
10	7
12	12
15	10
17	14
19	16
22	19
25	20
25	23

Feature (X)

Label (y)



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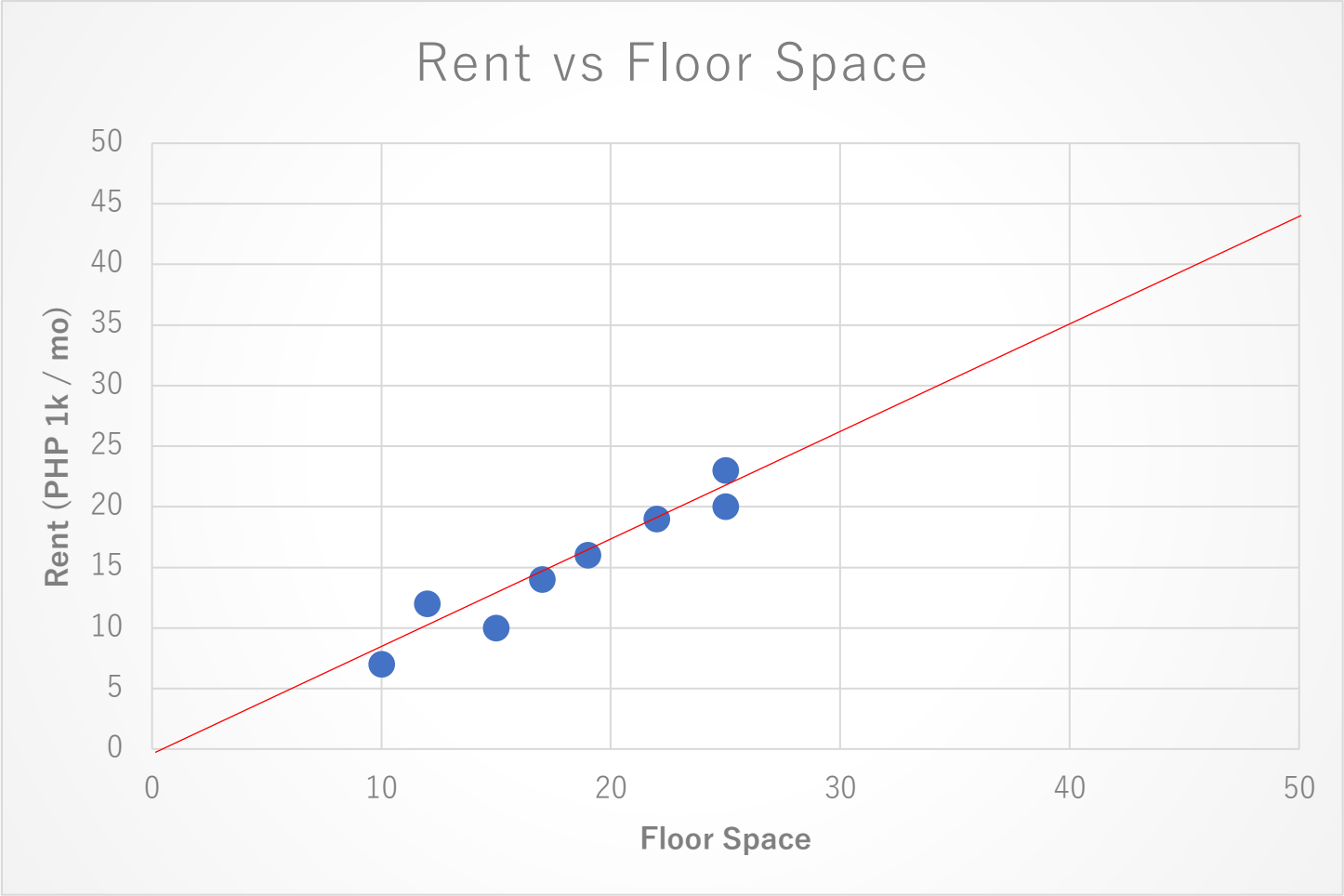

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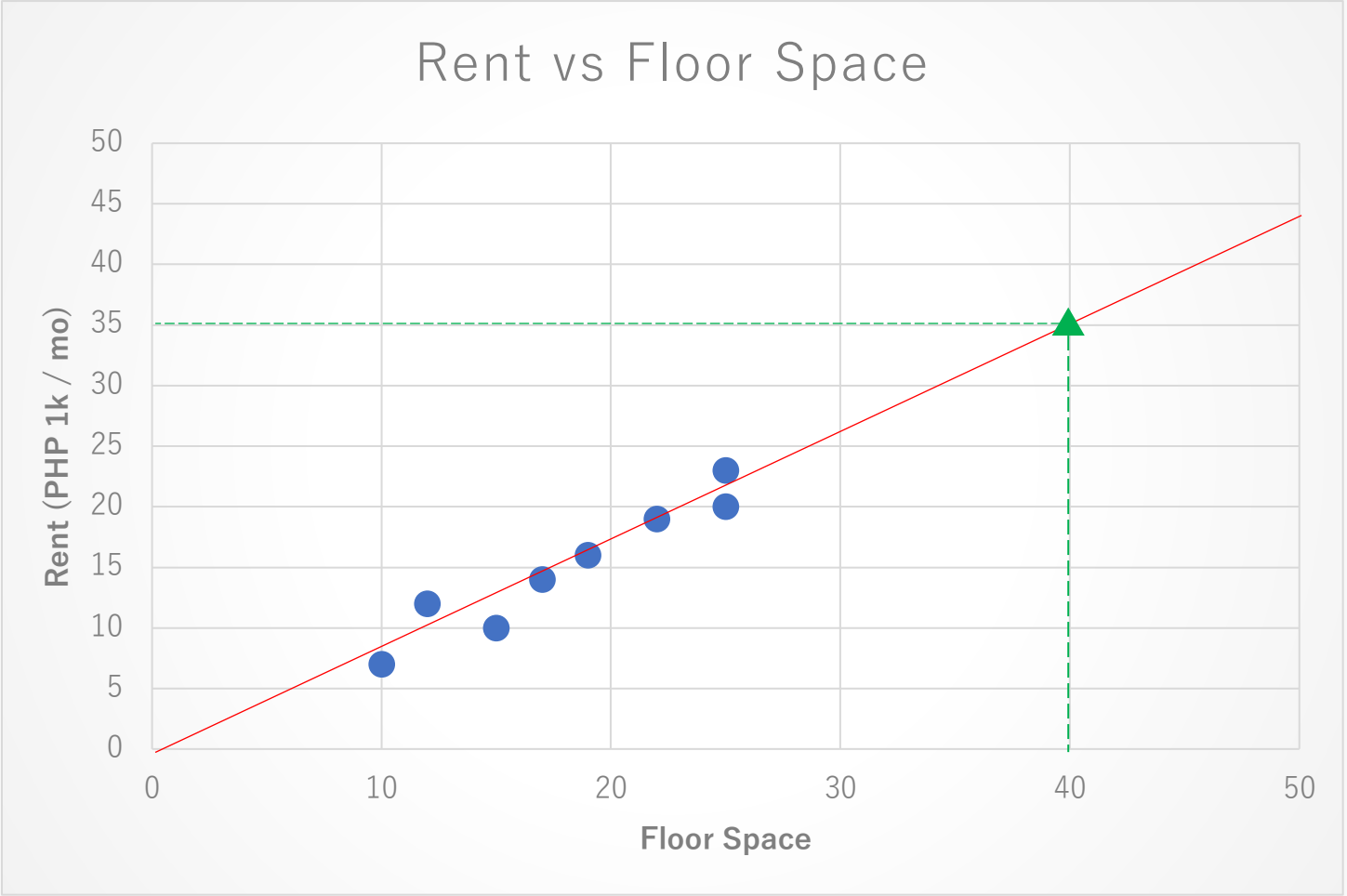
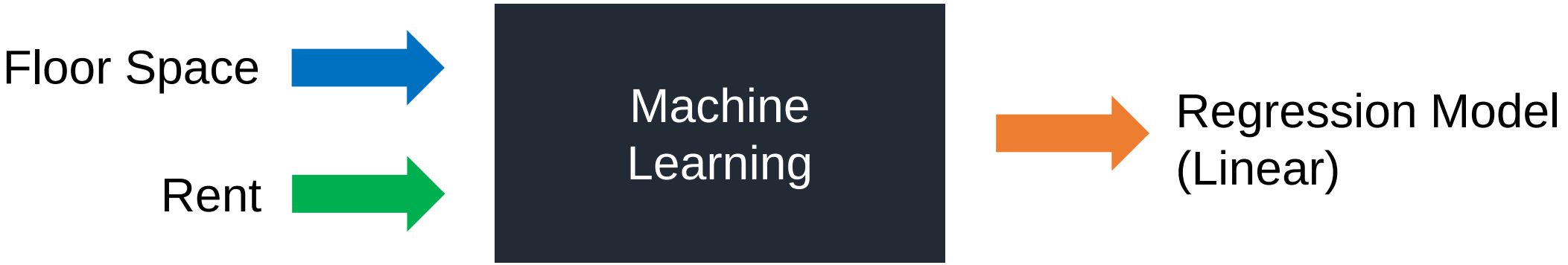
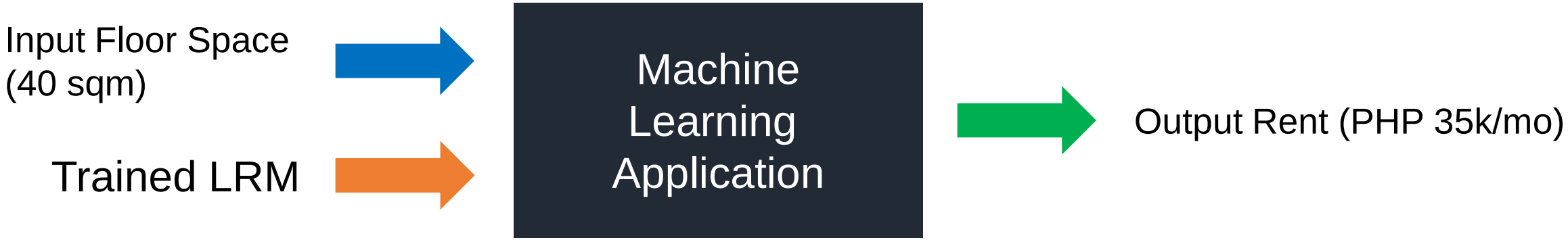
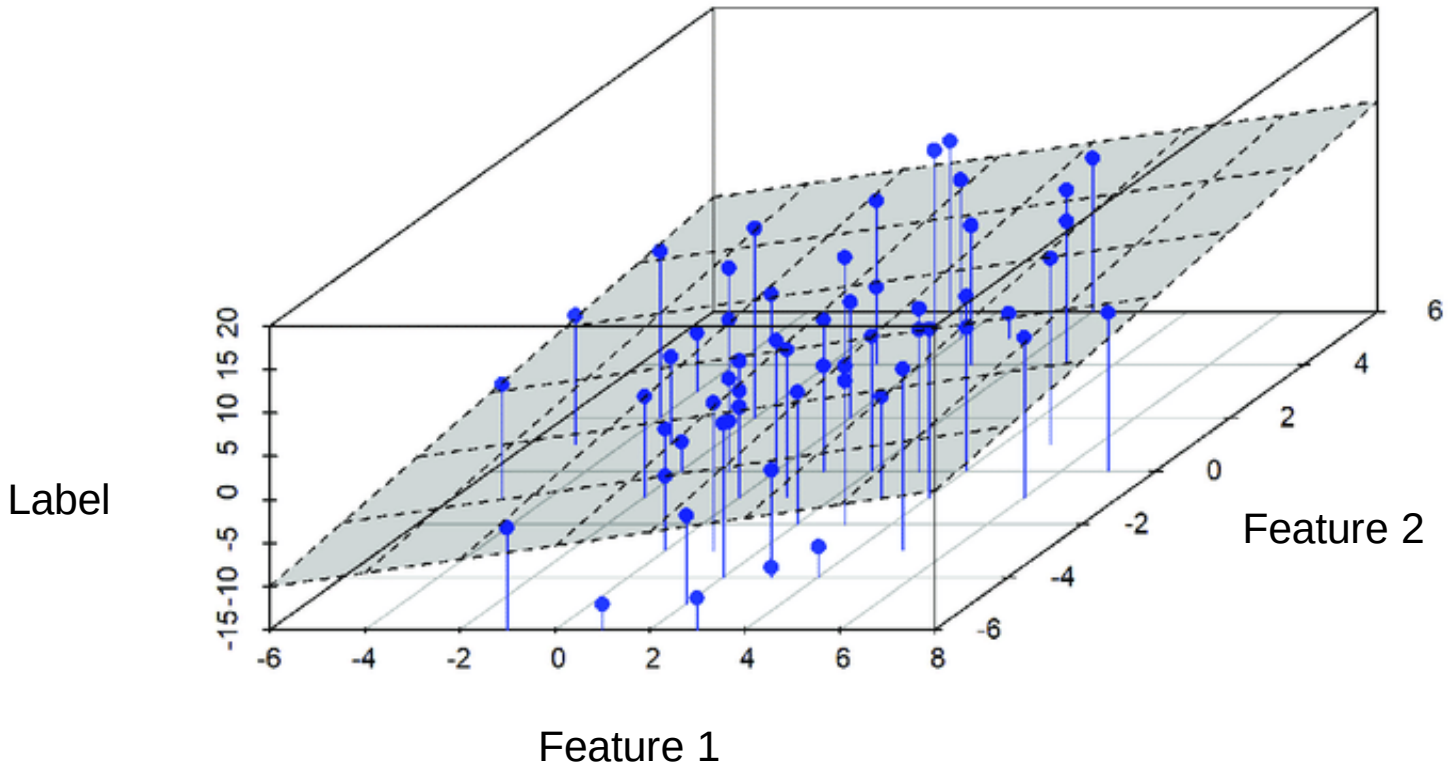



Floor Space
Rent
Machine Learning
Regression Model (Linear)


Input Floor Space
(40 sqm)
Trained LRM
Machine
Learning
Application
Output Rent (PHP 35k/mo)

Second Order Regression Example

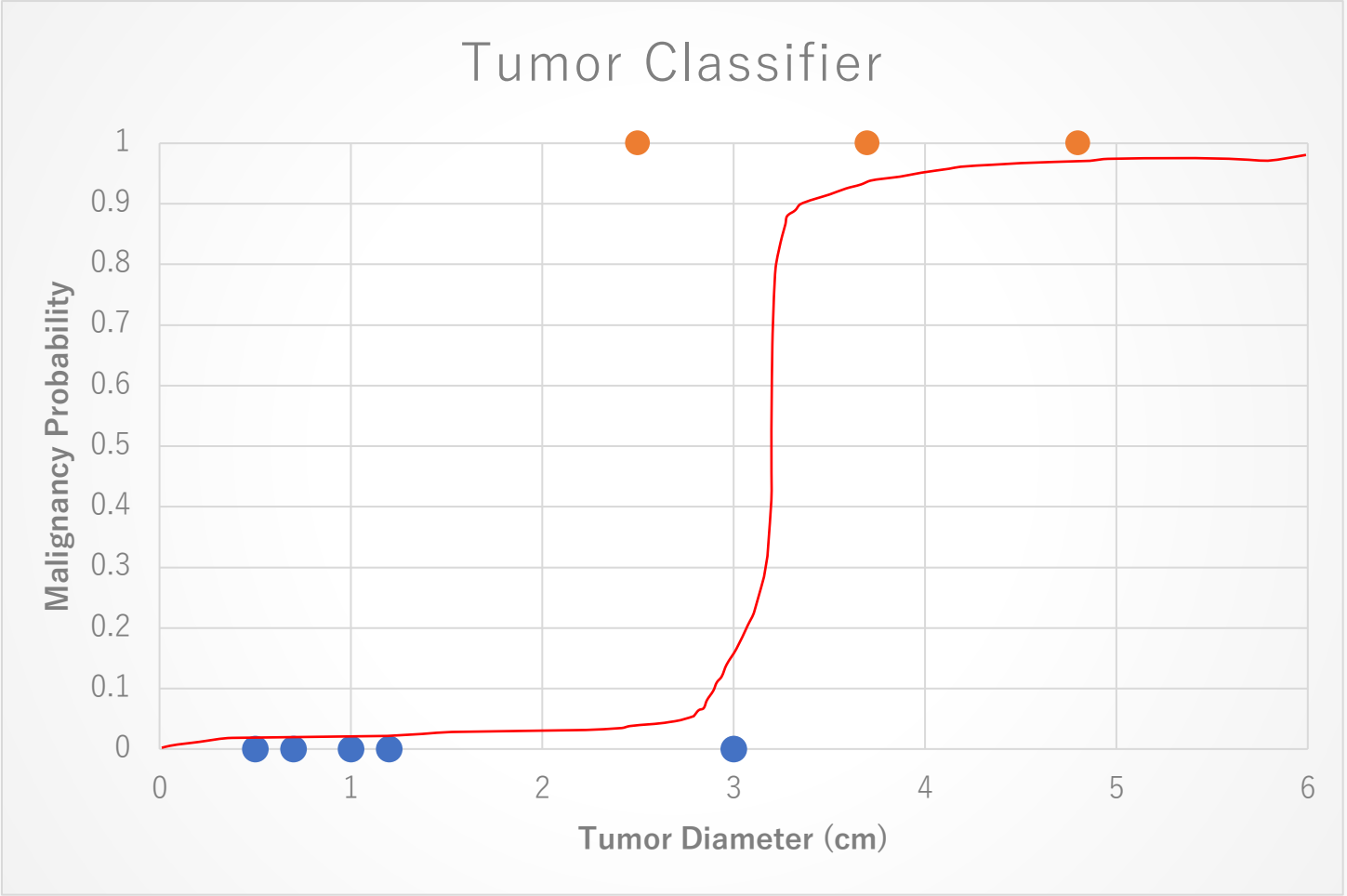


Classification Example

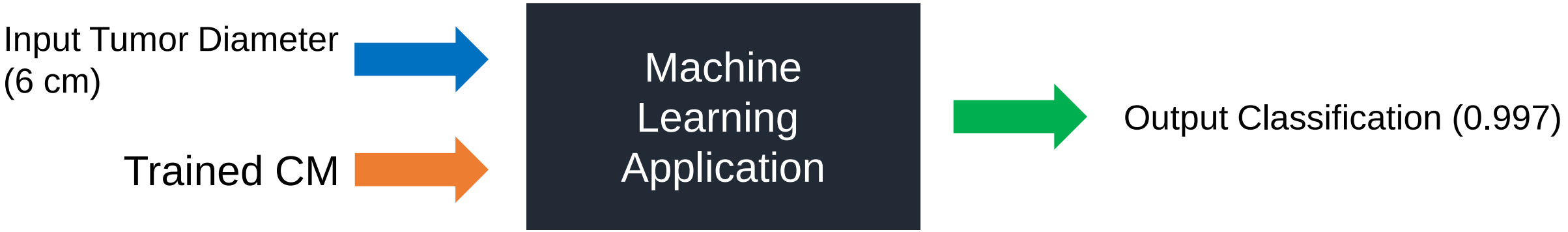
Tumor Diameter (cm)	Malignant?
0.5	0
0.7	0
1	0
1.2	0
2.5	1
3	0
3.7	1
4.8	1

Feature (X)

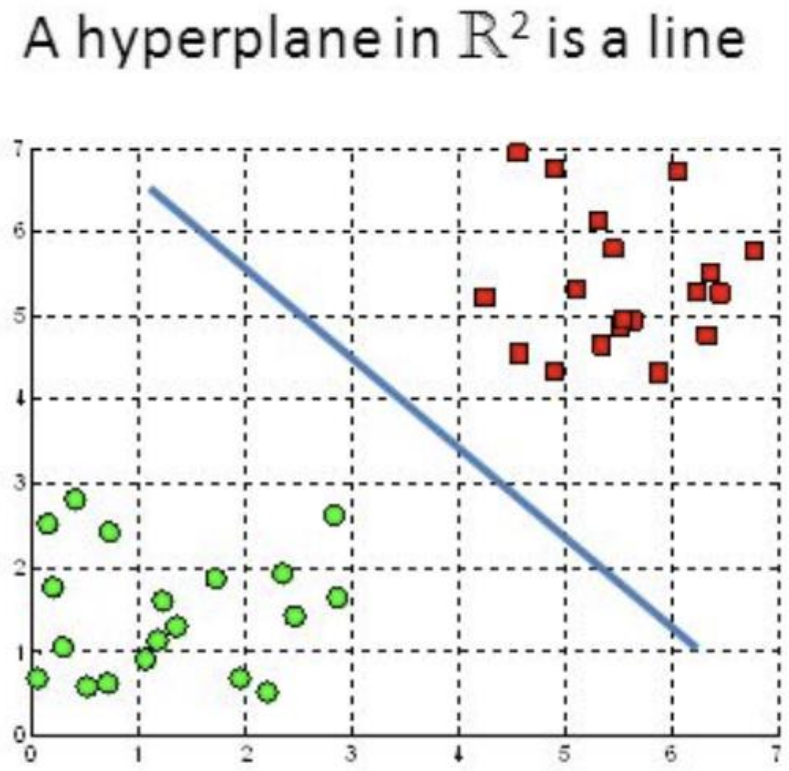
Label (y)

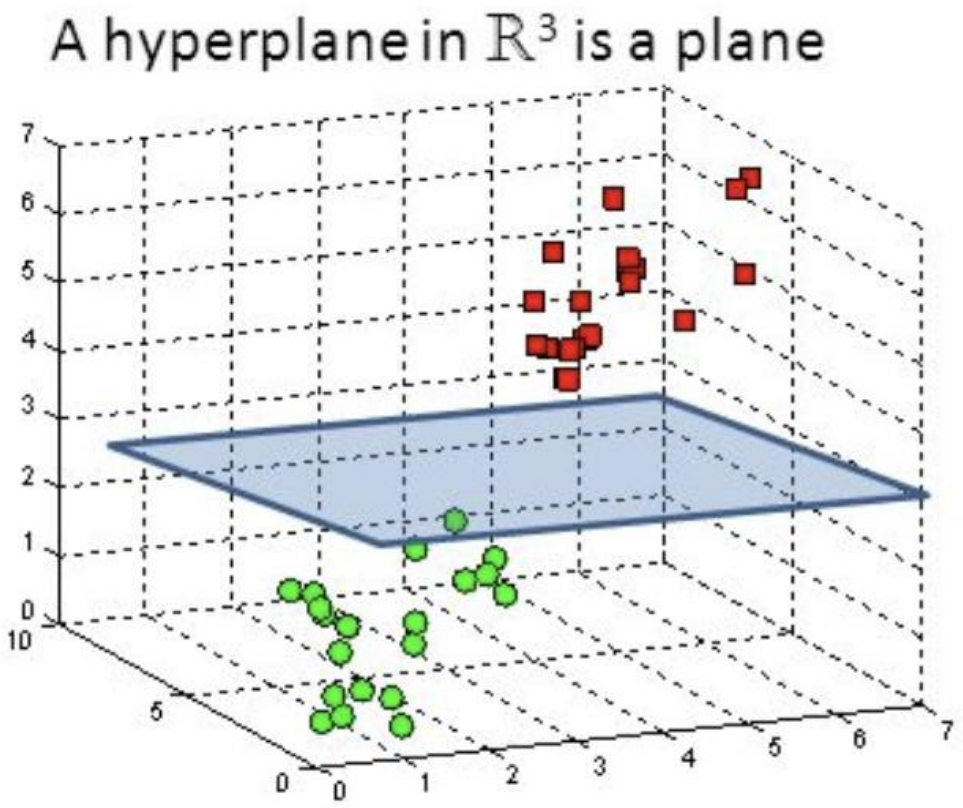



Tumor Diameter
Maglinant? (1 or 0)
Machine Learning
Classification Model (Logistic Regression)


Input Tumor Diameter
(6 cm)
Trained CM
Machine
Learning
Application
Output Classification (0.997)

Second Order Classification Example





Part III.
Machine Learning in Python

Part IV.
How Machine Learning works

coursera.org/learn/machine-learning

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Machine Learning

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