

# MACHINE LEARNING



# The A Team

Machine Learning

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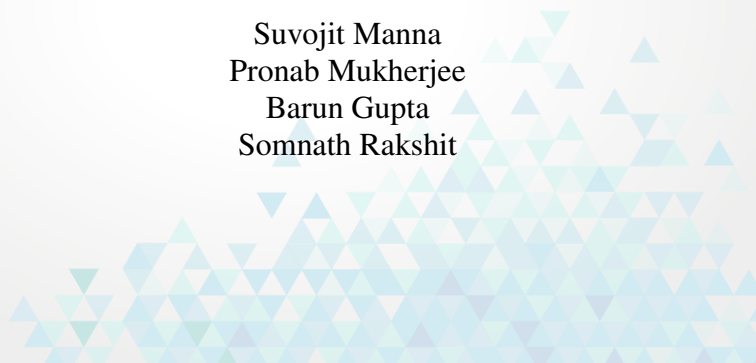
Classifications

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Let's Get Started

# Machine Learning — What ?

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Field of study that gives computers the ability to learn without being explicitly programmed.

Instead of writing code, you feed data to the generic algorithm and it builds its own logic based on the data.



Figure: Classification Algorithms

# Case Studies — Supervised Learning

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Bedroom	Sq.Ft	Neighbourhood	Price
3	2000	Uptown	\$350,000
2	800	Downtown	\$200,000
2	850	City Centre	\$150,000
1	550	Suburbs	\$75,000
4	2000	Suburbs	\$200,000

Bedroom	Sq.Ft	Neighbourhood	Price
3	2000	Uptown	???

Supervised learning is the machine learning task of inferring a function from labeled training data.

# Case Studies — Supervised Learning

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## Math's Exam - Answer Keys

$$1) 2 \ 4 \ 5 = 3 \quad 5) 6 \ 2 \ 2 = 10$$

$$2) 5 \ 2 \ 8 = 2 \quad 6) 3 \ 1 \ 1 = 2$$

$$3) 2 \ 2 \ 1 = 3 \quad 7) 5 \ 3 \ 4 = 11$$

$$4) 2 \ 2 \ 4 = 6 \quad 8) 1 \ 8 \ 1 = 7$$

# Machine Learning — Formal Definition

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The field of machine learning is concerned with the question of how to construct computer programs that automatically improve with experience.

A computer program is said to learn from experience  $E$  with respect to some class of tasks  $T$  and performance measure  $P$ , if its performance at tasks in  $T$ , as measured by  $P$ , improves with experience  $E$ .

Evolved from :

- Pattern Recognition
- Computational Learning Theory
- Artificial Intelligence



# Benefits — Machine Learning

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# Applications — Machine Learning

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# The pain is almost over

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Now that was very interesting!

The End