

# Machine Learning in practice

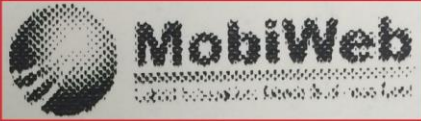
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# Our Plan

- ▶ Examples of successful application of Machine Learning (ML)
- ▶ But wait!? What is ML?
- ▶ Why is it so popular now?
- ▶ What is ML's impact on business?
- ▶ How can you adopt it in your company?



Receipt no: 50

Date: 30/09/2014 10:12:31

Opened By: admin

Insert By: admin

Payment Type: Cash

QTY	ITEM	PRICE	TOTAL
2x	Chicken Chop(unit)	12.00	24.00
1x	redeem1(unit)	2.00	2.00
1x	yeos(unit)	1.80	1.80
1x	king fried rice(unit)	12.00	12.00
<b>Total</b>			<b>39.80</b>
	Discount		0.00
	Grand		39.80
	Extra Disc		0.00
	Srvc ()		0.00
	<b>Inclusive Of Tax</b> (6.00%)		<b>2.25</b>
	Round Up		0.00
	Nett		39.80
	Tendered		0.00
	Change		-39.80

## Machine learning in accounting

- ▶ Who issued this receipt?
- ▶ When was it issued?
- ▶ What is the total of the receipt?
- ▶ What is the tax of the receipt?
  
- ▶ What is the time needed to answer these questions for 1 image?
  
- ▶ What if you need to answer these questions for several million images per day?

# What is machine learning

- ▶ Building a mathematical model by observing historical data (training data) in order to make predictions or decisions without being explicitly programmed to perform the task.
- ▶ Predict the price for house with size 2000 ft.
- ▶ Self driving cars:
  - ▶ <https://www.youtube.com/watch?v=ZRE97JTQ1Nc>

House Price in \$1000s (y)	Square Feet (x)
245	1400
312	1600
279	1700
308	1875
199	1100
219	1550
405	2350
324	2450
319	1425
255	1700

# Why now?

- ▶ Google trends **Machine learning** vs **Artificial intelligence**



# Why now?

- ▶ ML and AI Algorithms exists since 1940 why suddenly so popular ?
  - ▶ The amount of data!!!
    - ▶ Facebook 2013: **350 Million!** - images per day
  - ▶ Computational speed
  - ▶ Software tools and frameworks

# How big of a technology shift is ML/AI for businesses?

- ▶ **It's like electrification.**
  - ▶ It took about two or three decades for electrification to pretty much change the way the world was.
- ▶ However, implementing machine learning system is hard!
  - ▶ More complex than traditional software development.
  - ▶ Best practices and traditional approaches yet to be defined.
  - ▶ Requires people with good software development skills AND machine learning knowledge.

# How a company can adopt AI/ML?

- ▶ Identify a problem that your customers or your workers have.
- ▶ Write down a solution for that problem that you'd like to have.
- ▶ Work backwards and figure out what kind of automation might support this goal.
- ▶ Work back to whether there's the data you need, and how you collect it.



# Example

- ▶ Let's try it out.
  - ▶ Context - You own Human Resources agency.
  - ▶ Problem - Your clients are not happy. The agency connects its clients with candidates who do not fit the jobs' descriptions. Companies and job candidates, both, waste time.
  - ▶ Solution - ?
  - ▶ Data - ?

# Building Machine Learning system

- ▶ Phases of machine learning
  - ▶ Collecting data
  - ▶ Generating features
  - ▶ Learning models
  - ▶ Evaluating models
  - ▶ Publishing models
  - ▶ Responding

