

*** Applied Machine Learning Fundamentals ***

Machine Learning Introduction

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Agenda August 5, 2019

- ① General Overview
- ② Problem Types in Machine Learning
- ③ Key Challenges in Machine Learning

④ Lecture Overview

⑤ Wrap-Up

Summary

Recommended Literature and further Reading

Section:
General Overview



Why Machine Learning?

- *'We are drowning in information and starving for knowledge.'*
– *John Naisbitt*
- **Era of big data:**
 - In 2017 there are about **1.8 trillion** web-pages on the internet
 - **20 hours** of video are uploaded to YouTube every minute
 - Walmart handles more than **1 million** transactions per hour and has data bases containing more than **2.5 peta-bytes** (2.5×10^{15}) of information
- **No human being can deal with this data avalanche!**

Why Machine Learning? (Ctd.)

*'I keep saying the sexy job in the next ten years will be **statisticians** and **machine learners**. People think I'm joking, but who would've guessed that computer engineers would've been the sexy job of the 1990s? The ability to take data - to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it - that's going to be a hugely important skill in the next decades.'*

*– **Hal Varian**, Chief Economist at Google, 2009*

Definition of Machine Learning

- *'[Machine Learning is the] field of study that gives computers the ability to learn without being explicitly programmed.'*

– **Arthur Samuel, 1959**

- *'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 .'*

– **Tom Mitchell, 1997**

Section:

Problem Types in Machine Learning



Section:

Key Challenges in Machine Learning



Section:
Lecture Overview



Lecture Overview

Unit I: Machine Learning Introduction

Summary

Recommended Literature and further Reading



[1] Machine Learning

Tom Mitchell. McGraw-Hill Science. 1997.

→ See chapter 1 (Introduction)

Thank you very much for the attention!

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Do you have any questions?