CSE 4553
Machine Learning
Lecture 0: Course Introduction

Winter 2024

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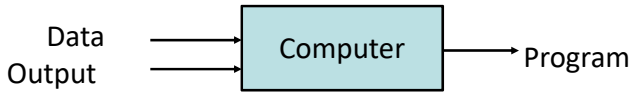
- Human learning VS Machine learning
- Course Information
- Intuitive understanding of Machine learning
- Machine learning research

Introduction

- **Conventional programming Vs Machine Learning**
  - **Conventional Programming**

"how to program computers"

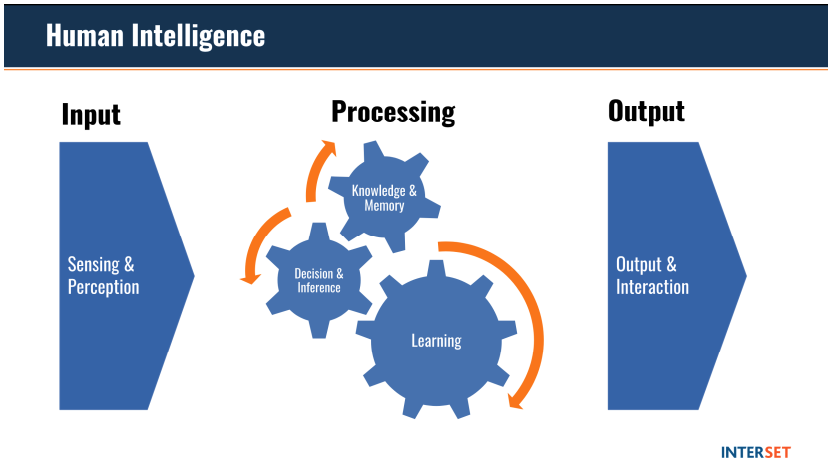
  - **Machine Learning**



"how to allow them to program themselves,"

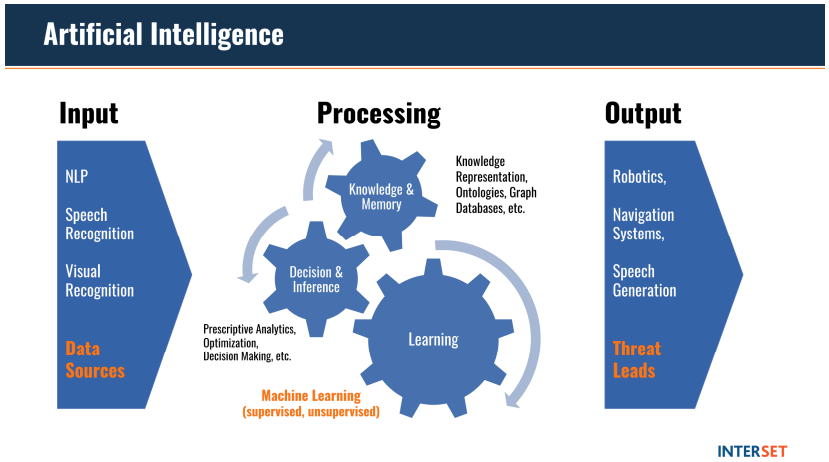
  - **Example: Sentiment Analysis**

Human learning VS Machine learning



https://interset.com/2018/02/20/ai-101-part-1-machine-learning/

Human learning VS Machine learning



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Machine learning in a nutshell

- Machine learning is programming computers to optimize a performance criterion using example data or past experience.
- We have a model defined up to some parameters, and learning is the execution of a computer program to optimize the parameters of the model using the training data or past experience.
- The model may be predictive to make predictions in the future, or descriptive to gain knowledge from data, or both

Course objective

- To learn the basic machine learning techniques, both from a theoretical and practical perspective
- To practice implementing and using these techniques for simple problems
- To understand the advantages/disadvantages of machine learning algorithms and how they relate to each other
- To get an idea on machine learning researches and potential applications.

Text Books

- **Text books:**
  - *TB1: Ethem Alpaydin, Introduction to Machine Learning, Second Edition, 2010.*
  - *TB2: Bishop, C. (2006). Pattern Recognition and Machine Learning. Berlin: Springer-Verlag.*
- **Reference books:**
  - *RB1: Mitchell, T., Machine Learning, McGraw Hill, 1997*
  - *RB2: Introduction to Machine Learning by Alex Smola, 2010*

Grading

- Class attendance : 30
- Assignments/Quizzes : 45
- Mid-semester Exam : 75
- Semester-final Exam : 150
- Total : 300

What about you?

- Remind me your name
- What do you expect from the course?
- What are some problems from everyday life that can be helped by machine learning?

classroom.google.com

- Classroom joining code:

bhrzfg4

Machine Learning Research

- Conferences:
  - International Conference on Machine Learning (ICML)
  - ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)
  - Conference on Neural Information Processing Systems (NIPS)
  - Asian Conference on Machine Learning (ACML)
  - European Conference on Machine Learning (ECML)
- Journals:
  - IEEE Transactions on Knowledge and Data Engineering (TKDE)
  - Journal of Machine Learning Research (JMLR)
  - Journal of Artificial Intelligence Research (JAIR)

- Any Question?