

ENGR 3321: Introduction to Deep Learning for Robotics

Introduction

08/28/2022



Outline

- Course related information
- Introduction to deep learning
- Github Classroom

Course Information

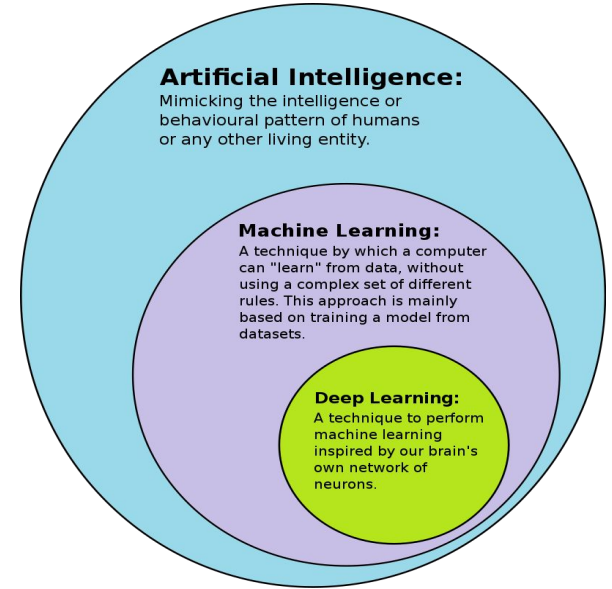
- Class/Lab: 01:00 PM - 02:15 PM, M/W, CCCS105
- Syllabus & Slides: https://linzhanguca.github.io/deep_learning-2023
- Announcements & Grades: Blackboard, course page
- Homework: Github Classroom

Instructor Information

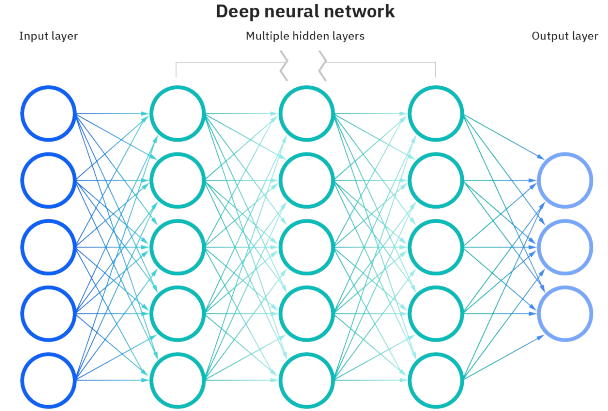
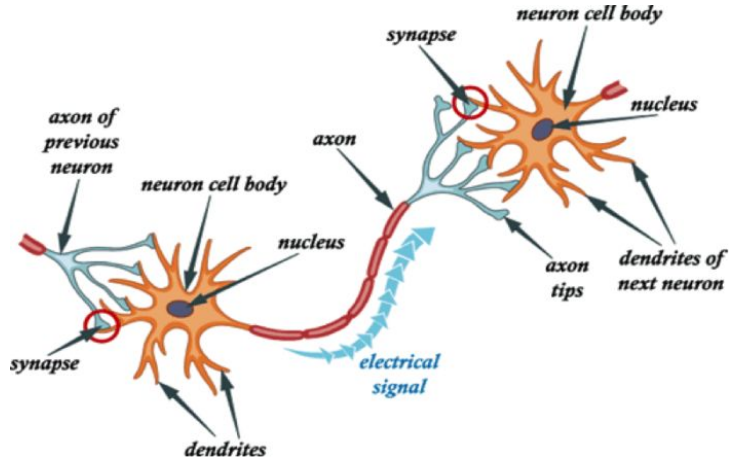
- Instructor: [Lin Zhang](#)
- Office Hour: [10:00 AM - 12:00 PM, Monday](#)
- Office Locations: [LSCA105](#) / [LSC110](#) / [LSC013](#)

Introduction to Deep Learning

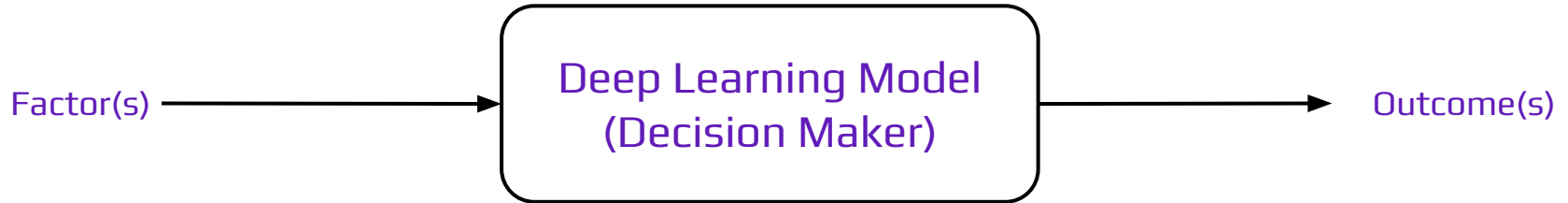
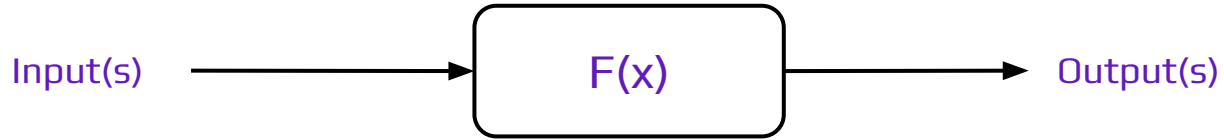
- Artificial Intelligence is the science and engineering of making intelligent machines, especially intelligent computer programs.
- Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.
- Deep Learning is a subfield of machine learning concerned with algorithms inspired by the structure and function of the brain called artificial neural networks.



Nature of Deep Learning



Decision Making



Deep Learning Applications

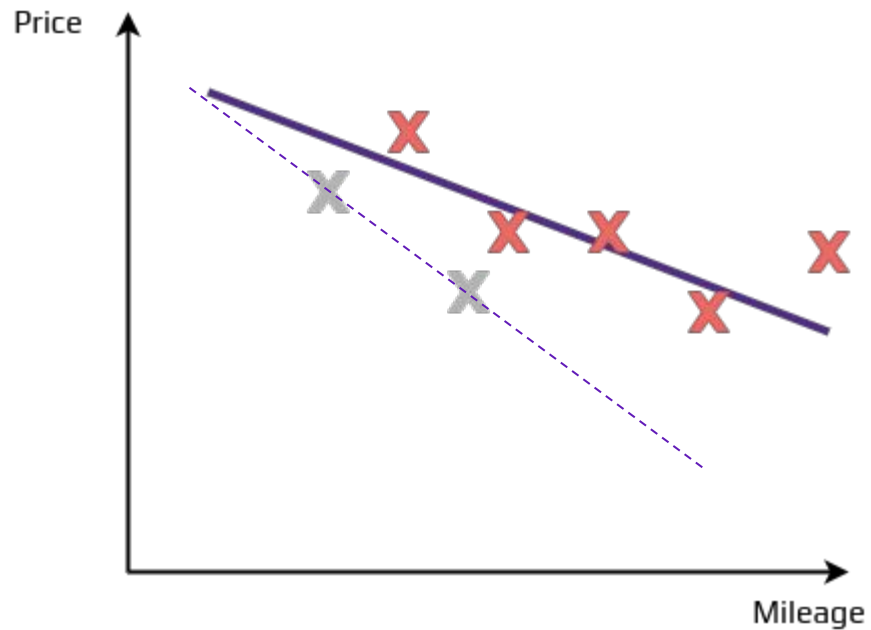
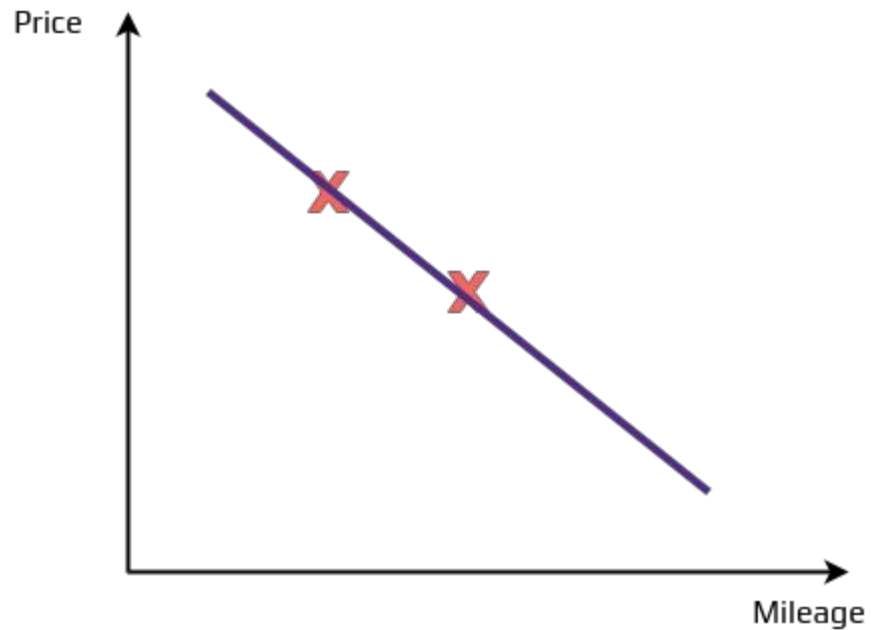
- [Chating](#)
- [Facial Recognition](#)
- [Object Detection](#)
- [3D Model Reconstruction](#)
- [Translation](#)
- [Speech to Text / Text to Speech](#)
- [Compose Novel / Image / Music](#)
- [Medical and Pharmaceutical](#)
- [Investment](#)
- [Gaming](#)

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Deep Learning in Robotics

- [Object Detection](#)
- [Autonomous Driving](#)
- [Behavioral Clone](#)
- [SLAM](#)
- [Self-Taught Learning](#)

Learn from Data



Pros

- Solves a lot of problems.
- End-to-End process.
- Growing community and rich resources.
- Well-paid jobs.

Cons

- Uncertainty.
- Nasty data.
- Hard to explain.
- Too popular.

Contents

- Neural networks mechanism.
- Convolutional neural networks based image processing.
- More interesting neural networks

Github Classroom

1. Create a Github account
2. Accept assignment
3. Update repository