Goskills

Advanced AI: Techniques, Applications, and Ethics

GoSkills online course syllabus

Skill level
Beginner

Lessons
21

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Pre-requisites
No prior experience needed

Video duration
1h 13m

Estimated study time
1h 13m

Instructor
Johannes Castner

Introduction

1 Becoming an AI expert

AI and ML encompass a diverse array of algorithms, each designed for specific purposes.

AI/ML Fundamentals

2 Demystifying AI and ML

With many different definitions for what AI and ML are, it's important for you to feel clear on how they'll be defined in this course.

3 Types of machine learning

There are many different types of machine learning including supervised, unsupervised, semi-supervised, reinforcement learning and causal/structural learning.

4 Types of artificial intelligence

Some problems are sole decision problems (is it a cow or a donkey in the picture) and some are more like games (trading algorithms or smart parking algorithms).

Solving Problems with Algorithms

5 Purposes of algorithms

Algorithms can and do help humanity, but they might also and have already hurt humanity.

6 Solving regression problems

When you predict a quantity, it is important to know what algorithms are the best and why.

7 Classification and detection problems

Sometimes a machine learning engineer or data scientist needs to predict a class or build an algorithm for object detection.

Solving Problems with Data

8 Demystifying relationships in data

For many problems, especially in policy-making and healthcare, it is important to not just predict, using many correlations, but to understand causation and to understand other types of substantive relationships in the data.

9 Integrating knowledge graphs

Knowledge Graphs give machines common sense; without them they are limited to learning correlations in the data.

10 Leveraging transfer learning

When you have only a few data points, relatively speaking, you are not necessarily stuck but you might be able to use transfer learning to make state of the art inference.

Creating Conversational Interfaces

11 Generating sensible language utterances

Conversational interfaces are clearly part of the future development in app building.

12 Building conversational experiences

According to Gartner Quadrant, conversational interfaces will soon replace most apps.

AI as related to Game Theory

13 Building competitive games

Reinforcement learning is a great technique to build competitive games.

14 Building cooperative games

Building cooperative games is not only a fun application of algorithms, but it can also be a serious and useful application.

Ethics: the Crown Jewel of Intelligence

15 Mitigating bias in ML

Bias is often cited as one of the major ethical failings of machine learning models.

16 Bias conflicting with privacy

Privacy is another important common ethical failing, and protocols around this failing have now been encoded into law.

17 Identifying conflicting ethics

When examining AI/ML ethics, it's important to ask "what ethic?" instead of "is it ethical?".

18 Avoiding ethically paternalistic apps

Paternalistic apps are one of the common ethical challenges that arise when building apps.

19 Integrating ethical design systems

The Value Sensitive Design is an important framework for designing systems that embody ethical values.

20 Creating capability sensitive designs

Capability Sensitive Design is able to account for human diversity, and it's able to counter injustices that manifest in technology design.

Conclusion

21 Reinforce your learning

Thank you for watching this course!

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