LECTURER: Nghia Duong-Trung

ARTIFICIAL INTELLIGENCE

TOPIC OUTLINE

History of Artificial Intelligence 1

Early Systems in Artificial Intelligence 2

Neuroscience and Cognitive Science 3

Modern Artificial Intelligence Systems 4

Applications of Artificial Intelligence 5

- Course book: Artificial Intelligence_DLMAIAI01, provided by IU, myStudies
- Reading list DLMAIAI01, provided by IU, myStudies
- The amount of slides content is based on the course book.
- Additional teaching materials:

https://github.com/duongtrung/IU-AI-DLMAIAI01

DISCLAIMER

- This is the modified version of the IU slides.
- I used it for my lectures at IU only.

UNIT 5

APPLICATIONS OF ARTIFICIAL INTELLIGENCE

STUDY GOALS

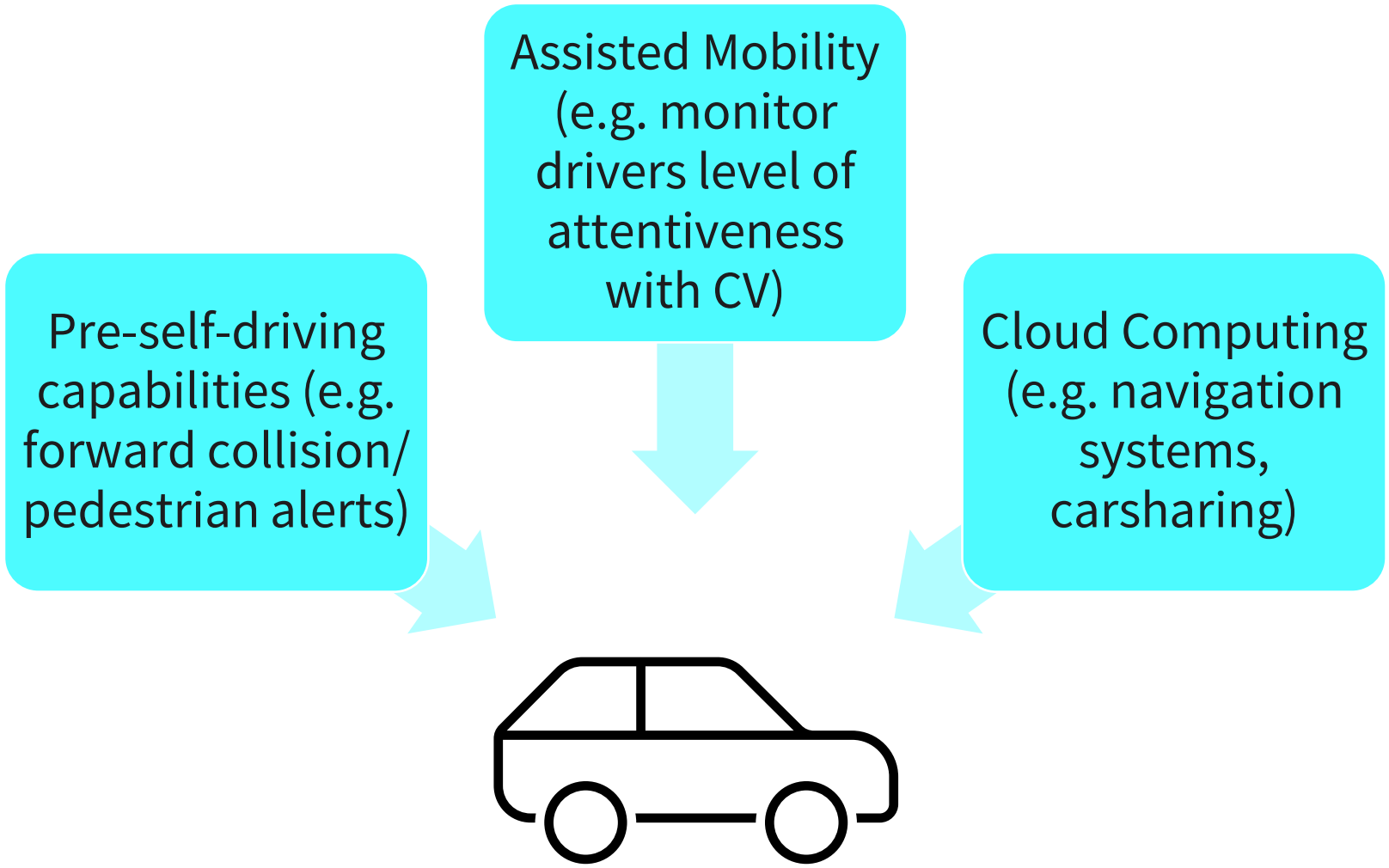
On completion of this unit, you will have learned …

- … how artificial intelligence techniques will aid the coming mobility revolution.
- … about the ways the medicine and health care sectors can benefit from artificial intelligence.
- … to distinguish between the multitude of ways artificial intelligence is used to support current financial processes as well as enable entirely new business models in the financial sector.
- … how artificial intelligence is employed in retail to automize workflows, optimize supply chains, and help in tailoring services to customers.

EXPLAIN SIMPLY

1. Explain the concept of blockchain. How does cryptocurrency relate to it?
2. Describe some of the improvements the industry is experiencing through the use of AI.
3. Name a future mobility trend and explain what kind of impact AI will have.

MOBILITY AND AUTONOMOUS VEHICLES

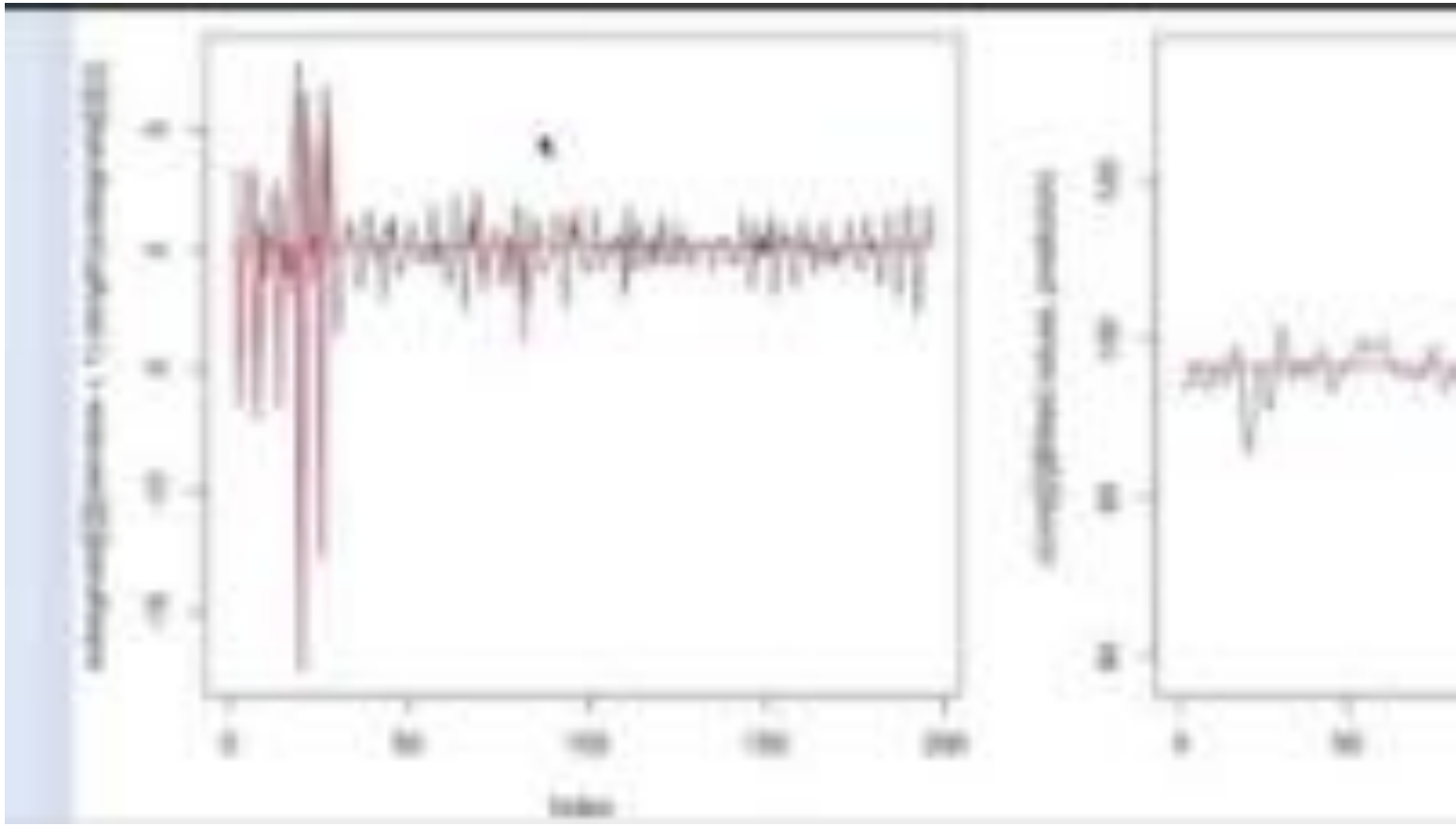


MOBILITY AND AUTONOMOUS VEHICLES

Source of the Video: YouTube, TED-Ed, 2019, https://www.youtube.com/watch?v=PRg5RNU_JLk.

Sentrian

Remote patient intelligence platform focusing on detecting outliers to flag health risks of individuals



Source of the Video: YouTube, Sentrian RPI, 2014, https://www.youtube.com/watch?v=G3aCkFKTwM8.

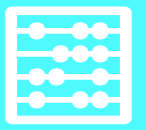
FINTECH PRODUCTS

Peer-to-Peer (P2P) Payment Systems

Split transactions between parties (e.g. PayPal)

Blockchain

digital, decentralized ledger that records transactions in a P2P network



Cryptocurrency

currency based on blockchain technology outside of centralized banking system with encryption (BitCoin)

Robo-Advising

Portfolio allocation management service offered through broker-dealer platforms

Numerai: Hedge fond gathering different data sources and providing it to data scientists

Investment Process:

Research and Data	Numerai researches and combines a large number of data sources together and transforms the data into regularized features and targets to create a pure dataset for the data science community.
Data Tournament	Datasets are made available to our community of data scientists who compete to create the best predictive models in a tournament. Data scientists stake their best models with our cryptocurrency, NMR.
Meta Model	Numerai creates the Meta Model by combining the latest predictions from the tournaments and outputs a signal for each stock in our investable universe.
Portfolio Construction	Model is fed into Numerai's optimization engine to construct the optimal risk penalized, market neutral portfolio.

Source of the text: https://numer.ai/fund.

Current retail paradigms:

1. Improvement of the flow of goods (demand forecasting)

2. Development of a better customer understanding (data analytics)

3. Improvement of customer buying experience (virtual assistants, recommendation engines, personalization)

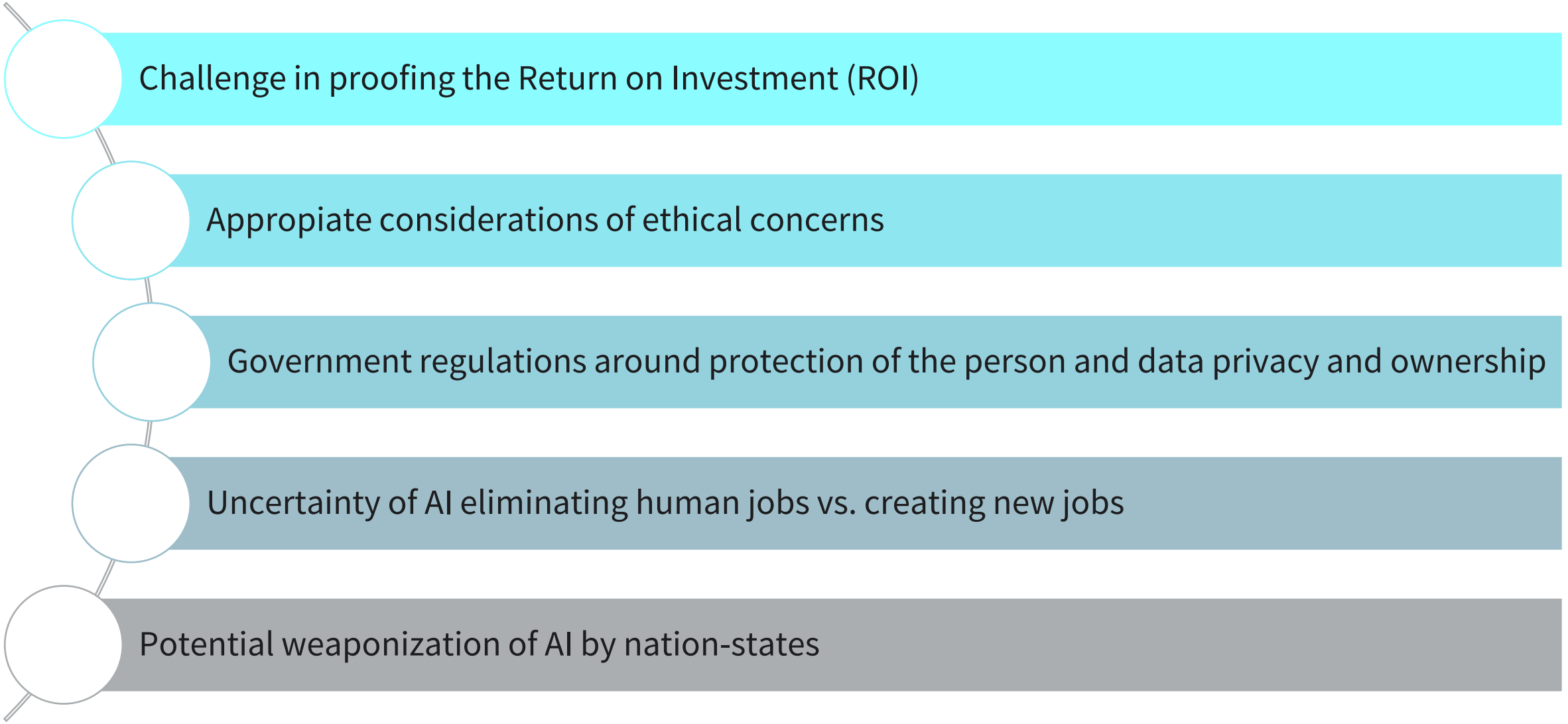
4. Introduction of new technologies to support (virtual fittings)

AI USE CASES IN THE RETAIL SECTOR

Source of the image: PowerPoint Stock Images.

- Automating browsing experience (improved and personalized search engines)
- Omnichannel personalization to capture prior customer interaction (in-store and online)
- Optimization in retail operations (robotics, faster fulfillment, better demand forecasting)
- Gather detailed market knowledge to improve client interactions through campaigns and social media participation

CHALLENGES FOR FUTURE AI APPLICATIONS



REVIEW STUDY GOALS

You have learned …

- … how artificial intelligence techniques will aid the coming mobility revolution.
- … about the ways the medicine and health care sectors can benefit from artificial intelligence.
- … to distinguish between the multitude of ways artificial intelligence is used to support current financial processes as well as enable entirely new business models in the financial sector.
- … how artificial intelligence is employed in retail to automize workflows, optimize supply chains, and help in tailoring services to customers.

SESSION 6

TRANSFER TASK

TRANSFER TASK

Choose an AI-driven company of your choice and pitch it to your classmates. Explain the meaning of AI for the company – how might the company look like without AI?

Some ideas:

- Aurora
- DocuSign
- Big Techs: Airbnb, Amazon, Google, Meta, Microsoft etc.

TRANSFER TASK
PRESENTATION OF THE RESULTS

Please present your results.

The results will be discussed in plenary.

1. Robo-advising is a FinTech term that describes
   a) advice given to banks to choose between.
   b) industry advice on the purchasing of robots.
   c) advice on the best encryption schemes for blockchains.
   d) automatic portfolio allocation and management.

2. Government regulation of artificial intelligence is
   a) not at all advisable.
   b) limited to the application of artificial intelligence in warfare.
   c) only advisable with respect to potential job market impacts.
   d) advisable with respect to the protection of privacy and rights to data ownership.

3. One major customer facing artificial intelligence service in retail is given by
   a) customer support chatbots.
   b) supply chain optimization.
   c) automatically controlled warehouses.
   d) call center management.

LEARNING CONTROL QUESTIONS

1. d
2. d
3. a

How did you like the course?

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