

How Artificial Intelligence Can Support Healthcare









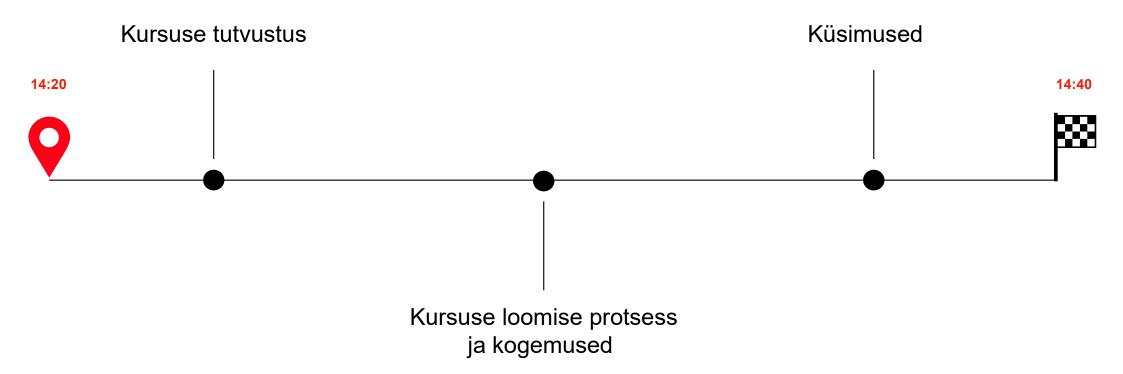








Teemad



AlProHealth MOOC





veebipõhine vaba juurdepääsuga



4 nädalat



inglise keeles



platvorm

AlProHealth MOOC

Õppejõud

Online Courses / Healthcare & Medicine













How Artificial Intelligence Can Support Healthcare

Explore how AI can be used to improve patient care and build your understanding of how to implement AI in the health professions.

** * * * * 4.6 (16 reviews) 2,238 enrolled on this course



How Artificial Intelligence Can Support Healthcare

* * * * 4.6 (16 reviews)

2,238 enrolled on this course

4 weeks

5 4 hours per week

B Digital certificate when eligible

∠ Intermediate level

Join course

Find out more about how to join this course











Peter van Ooijen

Associate Professor Imaging Informatics at dept. of Radiotherapy and coordinator of the Machine Learning Lab of DASH both at the University Medical Center Groningen.



Elena Sügis

Data Science & Al educator and biomedical data scientist. Assistant Professor of Health Informatics at the Institute of Computer Science, University of



Rosa Verhoeven

MSc Artificial Intelligence and Human-Machine Communication. Content developer AlProHealth at Data Science Center in Health of the University Medical Center Groningen.



Daniel Pinto dos Santos

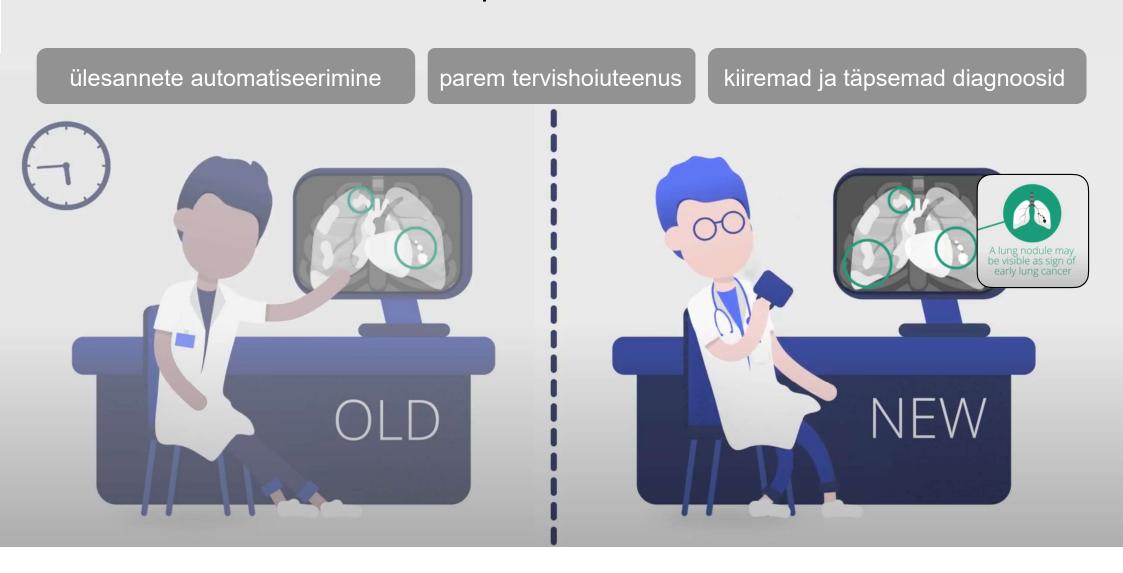
I am an Assistant Professor of Radiology at the University Hospital of Cologne. In my research I focus on the advancement of data driven approaches in radiology - from structured reporting to Al.



Michael Petr

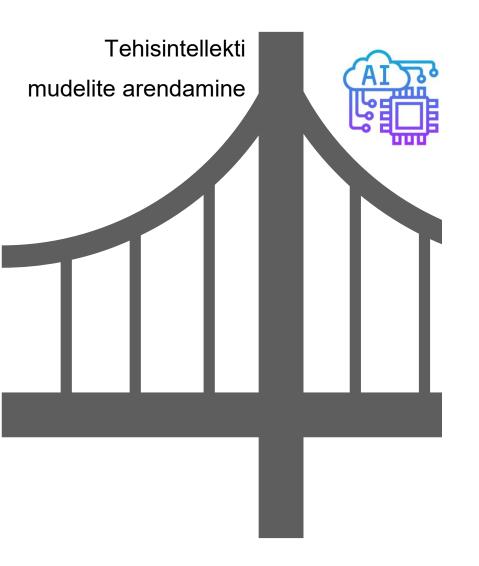
Biomedical engineer, PhD in aging, and postdoc at University of Copenhagen. Co-founder and CEO of Tracked.bio.

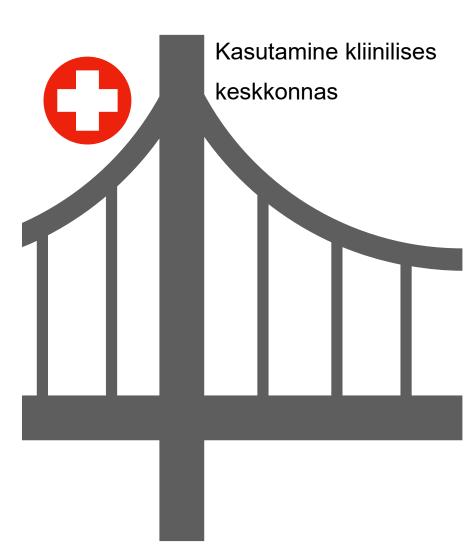
Tehisintellekti potentsiaal tervishoius





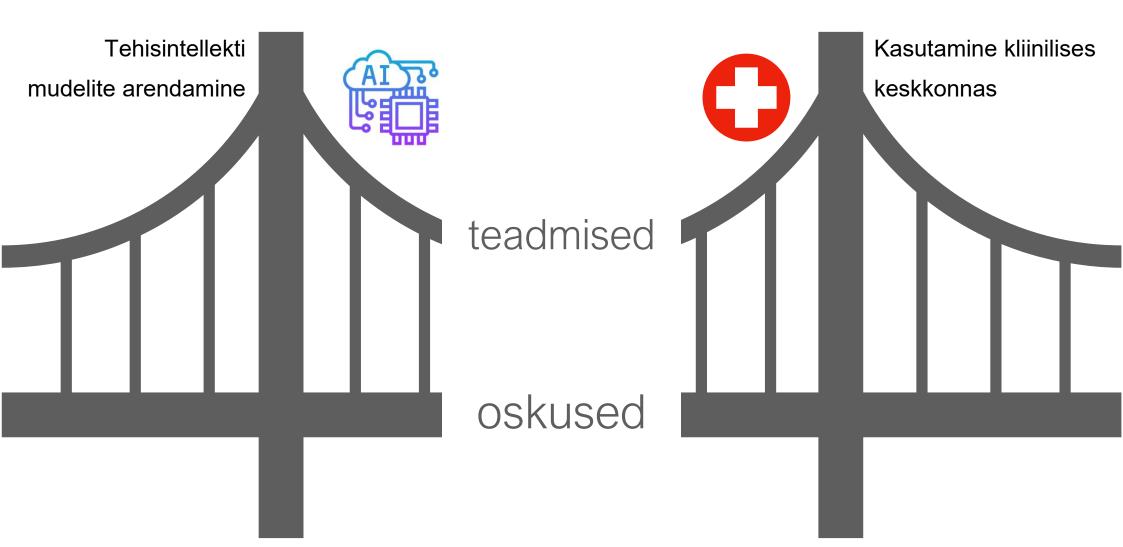
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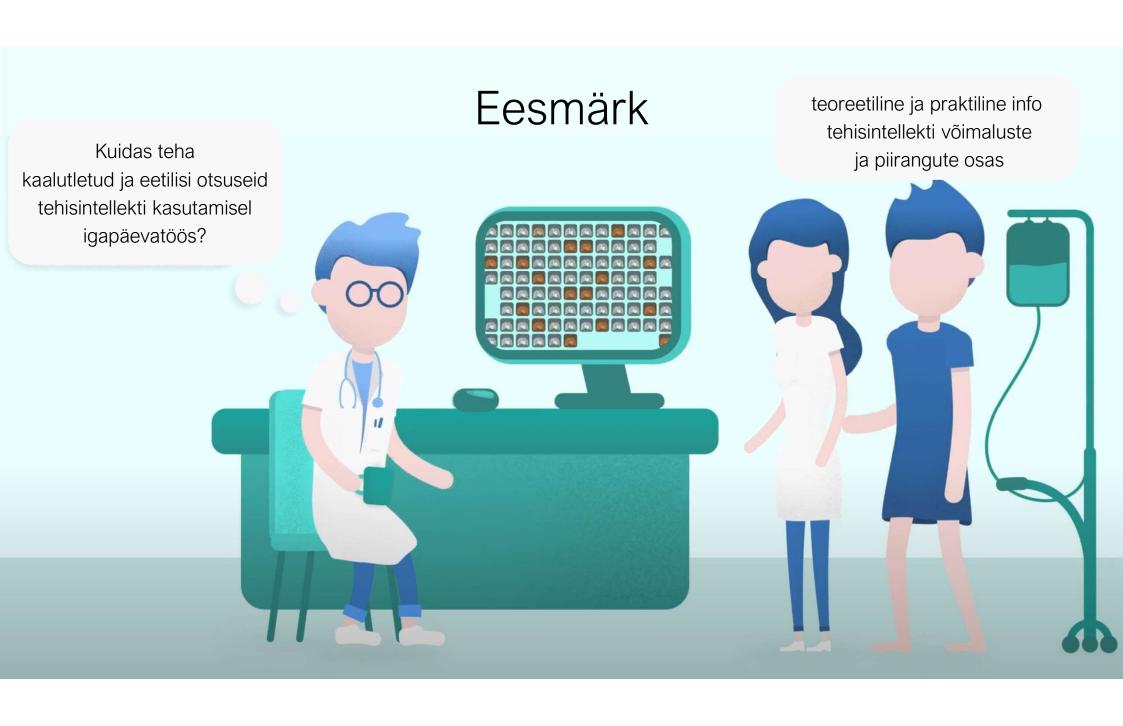
Õppevajadused



Sihtrühm



osalemine ei eelda varasemaid teadmisi või kogemusi tehisintellektiga



Õpiväljundid

oskab **selgitada** tehisintellekti **põhimõisteid** ja selle **kasutamist** tervishoiu valdkonna **kasutusjuhtudel**

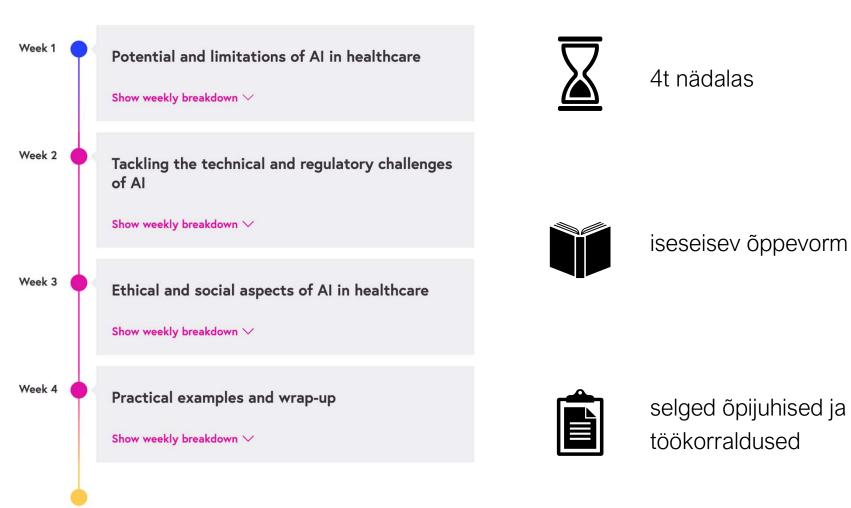
oskab **hinnata** tehisintellektiga seotud **väljakutseid ja riske** tervishoius



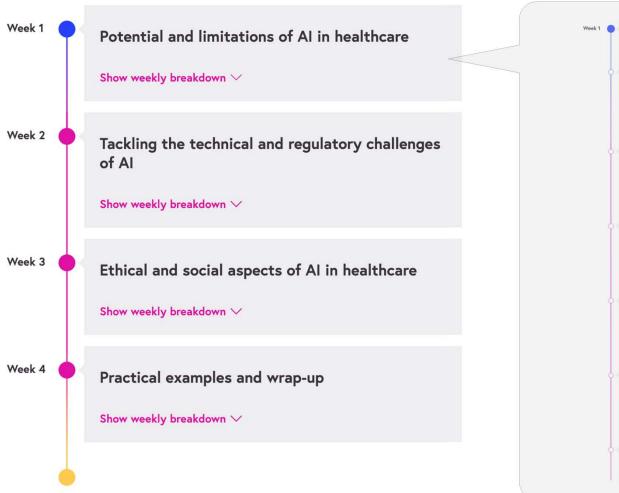
oskab **tuvastada** tehisintellekti **rakendamise nõuded** kliinilises keskkonnas

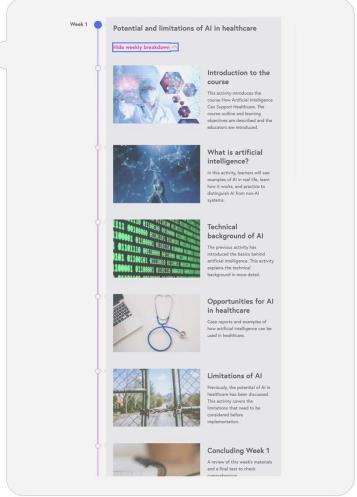
suudab **arutleda** tehisintellekti ja selle **kasutamise** üle **tervishoius** praktilisel ja sisukal viisil

Õppekava

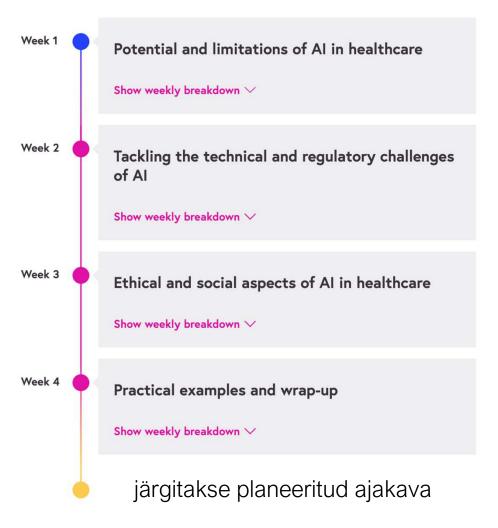


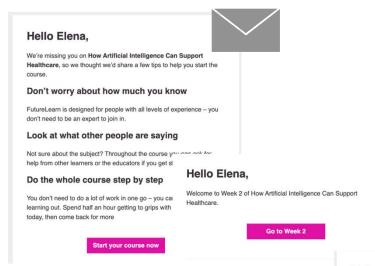
Nädal 1 näide





Automaatsed meeldetuletused ja kutsed õppima





We hope you enjoyed the first week of the course, in about Artificial Intelligence and its potential and limital healthcare. This week we will focus on technical and challenges of implementation of AI in healthcare.

This week, we will explore the different concepts by le experts and different stakeholders who have their ow different aspects of the potential and limitations of AI. course, there again will be prompts for discussion and you to take part in this and learn from each other. Ple. to use these discussions to ask questions if you're str help other people if they're stuck. Naturally, the exper course are also monitoring the discussions and are are comments and support.

I hope you are enjoying the course and look forward t

Hello Elena,

Welcome to Week 3 of How Artificial Intelligence Can Support

Go to Week 3

We're already at Week 3 of the How Artificial Intelligence Can Support Healthcare course! This week, we will look at the ethical and social aspects of Ai in healthcare using a similar setup as in Week 2. We will provide you with the different views and opinions of a variety of stakeholders.

The topics discussed in this week are especially prone to interpretation and views can differ greatly. Therefore, as in the previous weeks, we encourage you to take part in the discussion and fearn from us and each other. We are looking forward to seeing active discussions again, and we will be sure to join the discussion ourselves as well.

Keep your comments coming, we really appreciate all the feedback we get!

Do you like this course? Please share it with colleagues, friends and family. They can start learning straight away!

WEEK 1 Potential and limitations of AI in health... ~ Introduction to the course What is artificial intelligence? Technical background of AI Opportunities for AI in healthcare Limitations of Al Concluding Week 1 WEEK 2 Tackling the technical and regulatory c... \ Introduction Week 2 Trustworthy Al Explainable Al Clinical Products and Services using Al Concluding Week 2 WEEK 3 Ethical and social aspects of AI in healt... ~ Introduction Week 3 Ethical concerns Dealing with ethical concerns Interaction between AI and healthcare profes... > Patients interacting with Al Can we trust Al? **Future perspectives** Concluding Week 3 WEEK 4 Practical examples and wrap-up Introduction Week 4 Manager's perspective IT perspective Healthcare professional perspective Patient perspective Making a choice Concluding Week 4

Ülesehitus

You've completed 7 steps in Week 1

- Kursus on kergesti jälgitav ja navigeeritav
- Igal õppenädalal on sama ülesehitus ja sarnane õpperütm

Althoritonish

Welcome to the course

94 comment

Welcome to the course How Artificial Intelligence
Can Support Healthcare!

In the upcoming four weeks, you will learn how artificial intelligence can be implemented in the health professions in order to improve patient care.

Each week, different aspects will be covered relevant to thi implementation:

Step completed

Supp

Single S

Õppematerjalid ja tegevused

1.13

You've completed 1 step in Week 1



WHO guidance on Ethics & Governance of Artificial Intelligence for Health

© WHO

Potential of AI in healthcare

20 comments

Now that you have already thought about the applications of artificial intelligence in healthcare yourself, let's go over the main domains in which AI can be utilised. In this section we will rely on WHO_guidance on Ethics & Governance of Artificial Intelligence for Health and summarise the major applications of AI in healthcare where it demonstrates promising potential.

Diagnosis and prediction-based diagnosis

Although not vet routinely used in clinical practice. Al systems

Tekstid, pildid

You've completed 1 step in Week 2



View transcript

2.6

Download video: standard or HD

Bias in Al

8 comments

One of the seven requirements for reaching trustworthy AI is the application of diversity, non-discrimination, and fairness. In order to meet this requirement, bias should be avoided.

In this video, lead educator <u>Elena Sügis</u> introduces the topic of bias and displays the results of a study in which the effects of bias were examined.

Videod

4.6 You've completed 0 steps in Week 4



Meeting the head of the IT department

9 comment

The first stakeholder Lisa has to approach is her IT expert Lucas. Let's see what kind of requirements he considers important for the implementation of the AI solution in their clinical practice.

Lisa uses the ECLAIR guidelines to ask goal-directed questions to Lucas. Of course, Lucas has a lot of knowledge on the topic, so he can easily help her to fill in the matrix.

Animatsioonid

WEEK 1 Potential and limitations of Al in health...

WEEK 2

Tackling the technical and regulatory c... \vee

Introduction Week 2

Trustworthy AI

- 2.4 What do you consider to be trustworthy AI? Discussion
- 2.5 European approach to trustworthy Al Article
- 2.6 Bias in Al

Video

- 2.7 What would you do in case of bias? Discussion
- 2.8 Dealing with bias in Al
- 2.9 How do people in the field deal with bias?
- 2.10 Do you understand what trustworthy Al is?

 Quiz

Explainable AI

Clinical Products and Services using AI

Concluding Week 2

WEEK 3

Ethical and social aspects of AI in healt... >

WEEK 4

Practical examples and wrap-up

Videomaterjalid

2.6

You've completed 1 step in Week 2



subtiitrid

Close transcript

Download video: standard or HD

0:06

ELENA SüGIS: A central motivation for using AI systems in health care is to advance patient care by reducing human error and to improve the accuracy of diagnoses and clinical decisions. There is, however, also rising awareness about bias in AI technology and the potentially harmful effects. It is important to mention at this point that strictly speaking, biases in AI are not only caused by technical problems, that can be solved by technological means. It has been also shown that human bias, such as gender and racial bias can be inherited by AI systems. For example, face recognition systems have been shown to misclassify darker skinned females exhibiting gender and ethnicity bias.

0:57

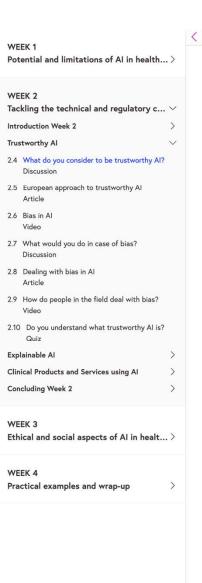
According to the ethical guidelines for trustworthy AI, technical robustness and safety, along with diversity, non-discrimination, and fairness, has to be ensured, while unfair bias has to be avoided.

video transkriptsioon

< Previous



Next >





Trust

© Possessed Photography via Unsplash.

What do you consider to be trustworthy AI?

62 comments

In the previous step, we introduced the idea of trustworthy AI. Before explaining what this entails, we would like to hear what you think it means.

What do you consider to be trustworthy Al? When would you be able to trust an Al system, and when would you not? What do you think is the key difference between the two? Leave your ideas in the discussion section and explore this topic with fellow learners.

© AlProHealth Project

62 comments

Discussion

Arutelufoorumid

vastus

juhis

Elena Sügis Lead Educator

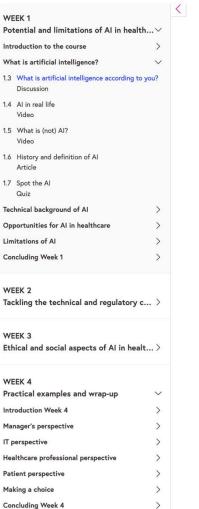
Add a comment... (plain text only, links will be auto-linked)

< Previous

✓ Mark as complete

Supp







Brainstorming © Fauxels via Pexels

What is artificial intelligence according to you?

148 comments

Before explaining what artificial intelligence is and how it works, we would like to know what comes to mind when you think about artificial intelligence.

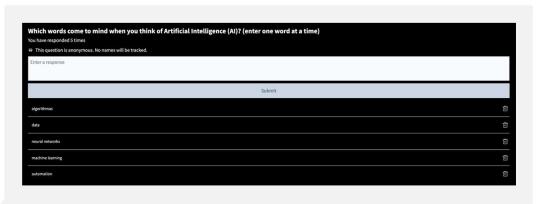
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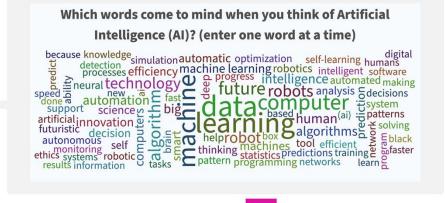
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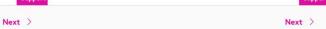
Once you have entered the words, you can click here to see a word cloud of the words that have been entered by you and fellow learners. The bigger the word, the more people mentioned it!

Did you agree with others, or do you seem to have different ideas on what artificial intelligence is? Please share your observations in the discussion section.

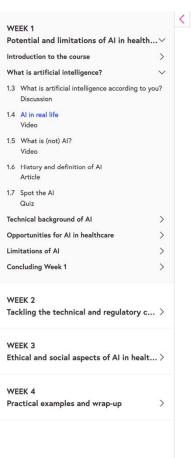
Küsimustikud





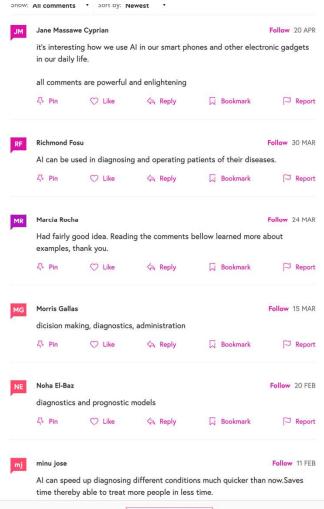




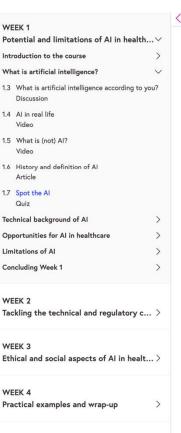


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Kommenteerimisvõimalused







Spot the Al



Viktoriinid

Question 3

Which application makes use of Artificial Intelligence?

- Ventilator supporting a patient's breathing during surgery
- Music recommendations on Spotify
- Functions in Photoshop that allow to adjust the contrast and brightness of a picture

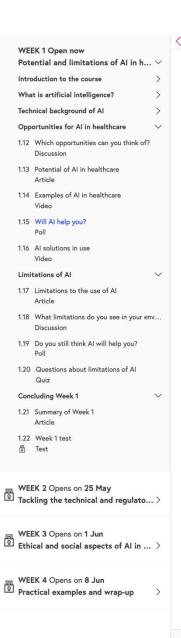
Correct



Rosa Verhoeven Educator

Spotify offers personalized music recommendations based on the music you have played before and the data it has from similar users. It also uses audio models to figure out which type of music is more similar to each other. Finally, it's able to consider factors like the weather to offer music that fits the moment. This is all done with the use of machine learning.

Зиррс



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Will Al help you?

40 comments

Hääletused

By now, you should have gotten an idea of the potential of AI in healthcare. We have shown some practical examples and you have discussed other possible applications.

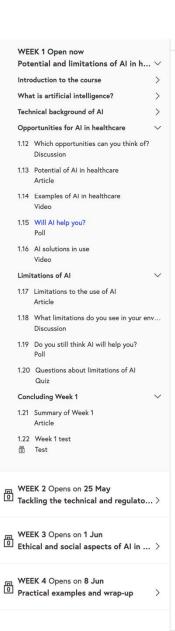
Now, we want to turn to your personal environment! If you are a healthcare professional, do you think artificial intelligence could be used in your daily tasks at work? If you are not working in healthcare, do you think artificial intelligence could be used to improve your health or to support diagnosis and treatment when you become a patient?

Do you think that AI could help you in your work tasks or with your health?

Yes, it can be very helpful	
It might be helpful in some tasks	
No, it cannot	
I am not sure	
Skip to results	Submit vote
Please note: if you skip to results, you will not be able to vote.	
40 comments	

✓ Mark as complete

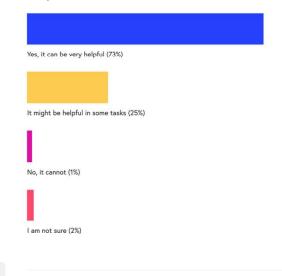
Next >



Do you think that AI could help you in your work tasks or with your health?

Hääletused

You selected Yes, it can be very helpful. See how your answer compares below.



kursuse instruktori kommentaar/lisajuhis

< Previous

Rosa Verhoeven Educator

Many think AI can be helpful, although how is not always clear.

Please elaborate on your answer in the discussion section. What is your work, and how does or might artificial intelligence help you? Can you find others who are dealing with the same tasks that are or could be assisted by artificial intelligence? Or do you think artificial intelligence might not be able to help you, and why?



Suppor

Next >

✓ Mark as complete

WEEK 2 Tackling the technical and regulatory c... Introduction Week 2 Trustworthy AI Explainable AI Clinical Products and Services using AI Concluding Week 2 2.20 Summary of Week 2 Article 2.21 Week 2 test



Test

Hindelised testid

pleted 7 steps in Week 1

Week 1 test



This is the final test of the first week. Your understanding of the technical background of AI and its potential and limitations in healthcare are tested.

Begin test

Test rules and grading

- You may take 3 attempts to answer each question and the test is not timed
- Each question has 3 points available
- · A point will be deducted for each incorrect attempt
- You can review your total score for the test at the end
- If you want to receive a Certificate of Achievement for this course you need to attempt all test
 questions and achieve an overall course score of at least 70%
- $\bullet\,$ You also need to mark at least 90% of steps on this course as complete
- If you score below the 70% required for a certificate on this course, please email support@futurelearn.com with the name of this course and your request to have your score reset.

Digitunnistus



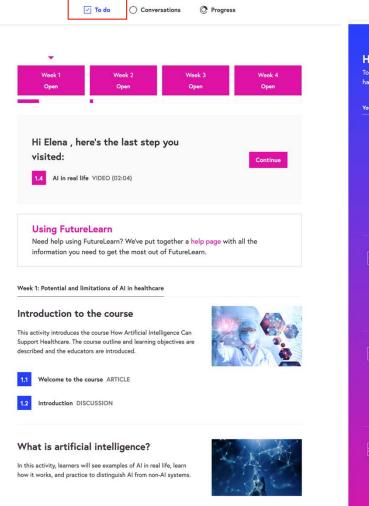
Help Centre · Child safety · Privacy · T&Cs

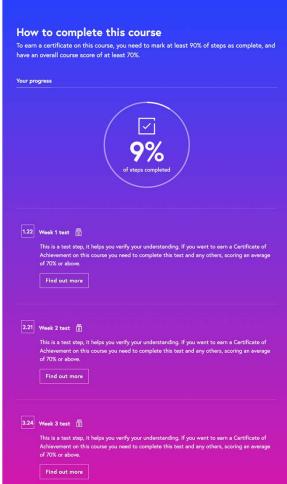
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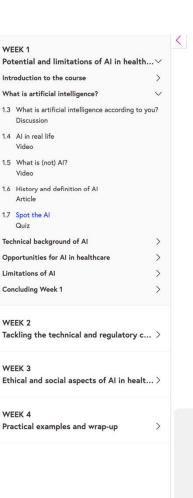


Edusammude jälgimine





☑ To do ☐ Conversations



Spot the Al



Viktoriinid

Question 3

Which application makes use of Artificial Intelligence?

- Ventilator supporting a patient's breathing during surgery
- Music recommendations on Spotify
- Functions in Photoshop that allow to adjust the contrast and brightness of a picture

Tagasiside vastuse kohta

Correct



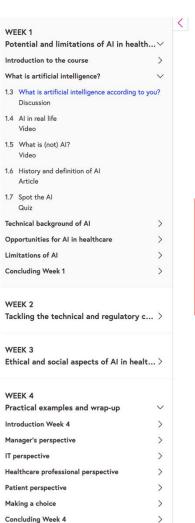
Rosa Verhoeven Educator

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Suppo

< Previous question

Next :





Brainstorming

© Fauxels via Pexels

What is artificial intelligence according to you?

148 comments

Before explaining what artificial intelligence is and how it works, we would like to know what comes to mind when you think about artificial intelligence.

We invite you to please enter a maximum of three words here.

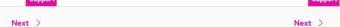
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Did you agree with others, or do you seem to have different ideas on what artificial intelligence is? Please share your observations in the discussion section.

arutelud kaasõppijatega ja

sisemine dialoog ja reflektsioon





Õppematerjalid ja tegevused hoiavad õppijat aktiivselt kaasatuna







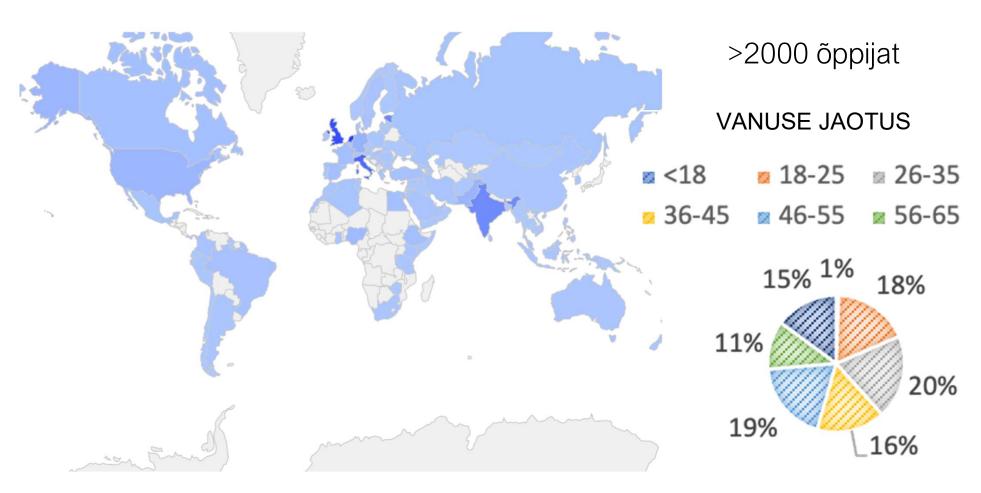




Videoloengud **Artiklid** Arutelud Hääletused Kommentaarid Küsimustikud Viktoriinid **Testid** (sh personaalse (õppejõud ja (tavaliselt küsimust tagasisidega külaliseksperdid) esitatakse õppejõudude teema alguses) poolt)

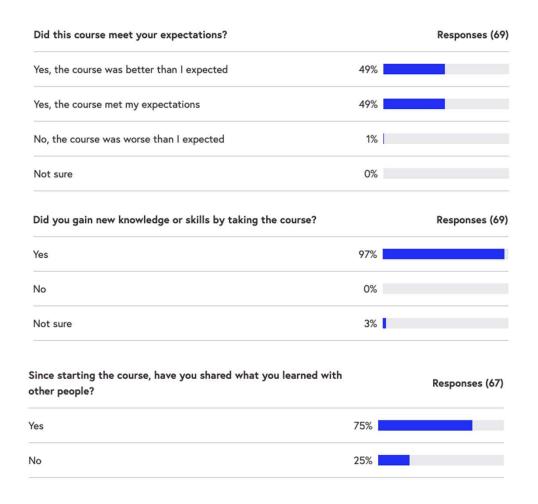


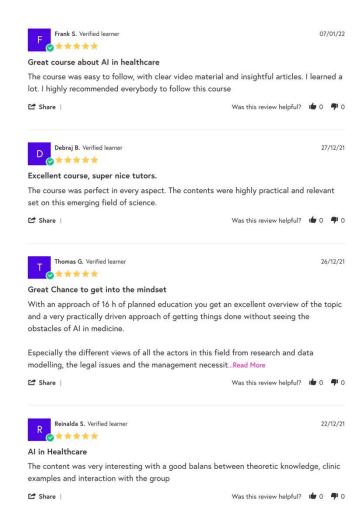
Kursusel osalejad





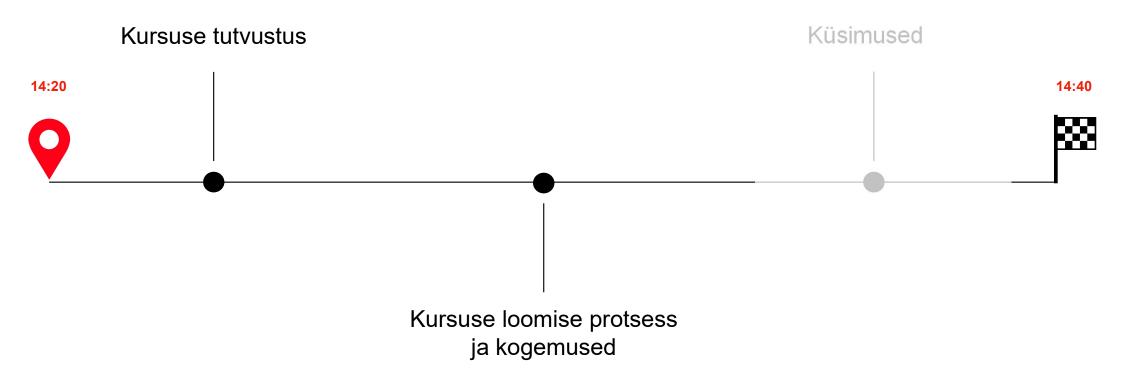
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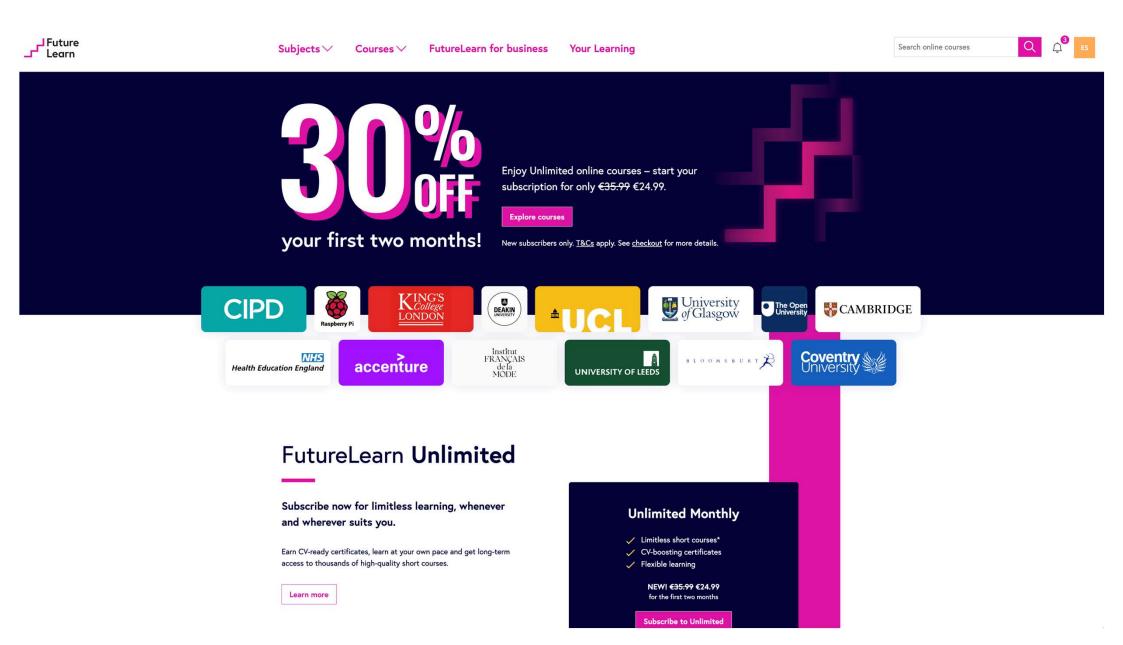






Teemad







Õppematerjalid ja tegevused















Videoloengud	Artiklid	Arutelud	Hääletused Küsimustikud Viktoriinid Testid	Kommentaarid	Parallelsed kursuse harud	Koodi kirjutamise ülesanded
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Õppematerjalid ja tegevused







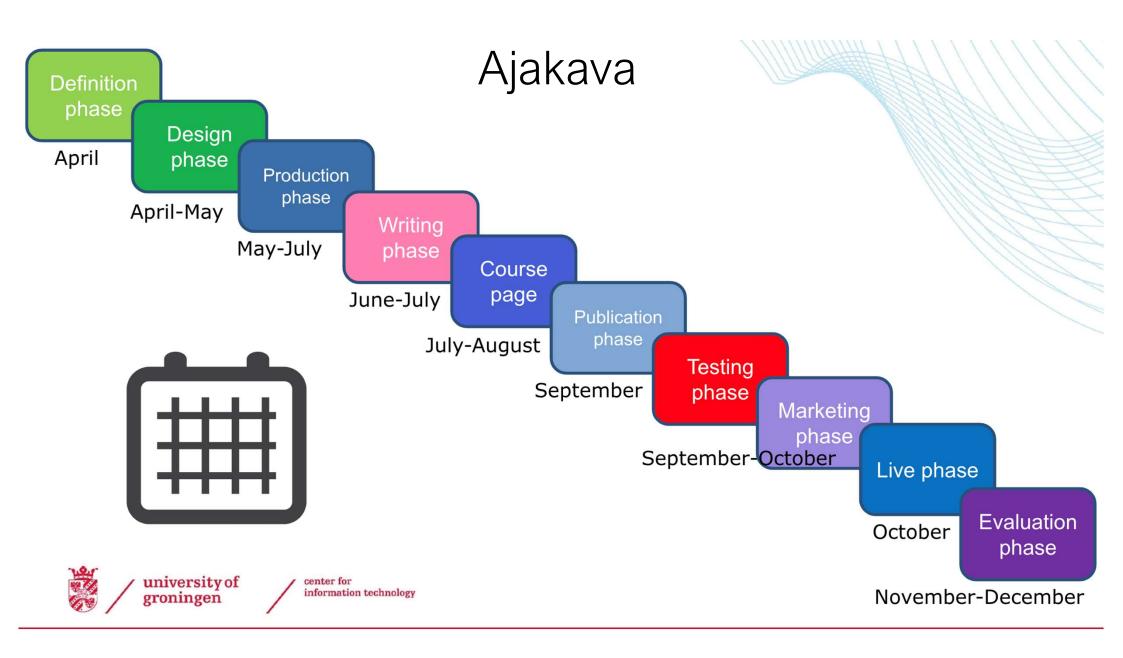








Videoloengud	Artiklid	Arutelud	Hääletused Küsimustikud Viktoriinid Testid	Kommentaarid	Parallelsed kursuse harud	Koodi kirjutamise ülesanded
(õppejõud ja külaliseksperdid)		(tavaliselt küsimust esitatakse teema alguses)		(sh personaalse tagasisidega õppejõudude poolt)	(nt eesti keeles)	





Kursuse planeerimine



Step-by-step design

This document sets up the actual design of the course. For now we select and briefly describe the flow of the course by formulating the actual steps and activities (=group of steps within a week). The actual texts and scripts will be produced during the next phases.

Learning objectives

[add the learning objectives from the course plan here]

Big questions

[add the big questions from the course plan here]

Step-by-step design

These are the step types you can choose from:

Telling stories / content steps	Provoking conversation	Celebrating progress
Article step	Discussion step	Quiz step
Video step	Poll step	Test step
Audio step	Exercise step or external tools	Peer Review

These are the learning types to choose from:

Learning type	Description			
---------------	-------------	--	--	--

Week by week planning

Design notes: Week 1 is crucial for getting learners engaged with the course and the content. In Week 1 the learner should:

- get to know the educator/s and the course structure
- try some of the common features e.g. do a short quiz, get involved in a social activity
- · set themselves some challenges and goals
- begin to prioritise where they might put their effort

Each week should have an obvious goal and the week's activities should feel coherent. It is a good idea to end each week with a summary of the week that encourages reflection on what's been learnt and/or a preview of the following week.



Tegevuse tüüp



Nädala tegevuste planeerimine

Vastav detailne **storyboard**

Tease nädala **tegevus** 2.6

Todoo Hadala togo tao 2.0				
Video				
Title	50 characters , ideally			
Bias in Al				
Short description max 150 characters				
Display of a situation in which bias in AI occurred.				
Body text 1-2 paragraphs				
One of the seven requirements for reaching trustworthy AI is the application of diversity, non-discrimination, and fairness. In order to meet this requirement, bias should be avoided. In this video, educator [Elena Sügis](https://www.futurelearn.com/profiles/17264375) introduces the topic of bias and displays the results of a study in which the effects of bias were examined. © AlProHealth Project				

Storyboard Template



		Title slide [Bias in AI]	followed by title slide Groningen logo top left
12	A central motivation for using AI systems in healthcare is to advance patient care by reducing human error and to improve the accuracy of diagnosis and clinical decisions. There is, however, also increasing awareness about bias in AI technologies and the potentially harmful effects.	Elena speaks to the camera	advance patient care by reducing human error improve the accuracy of diagnosis and clinical decisions
2	It is important to mention at this point that strictly speaking biases in AI are not only caused by technical problems that can be solved by technological means. It has been also shown that human bias, such as gender and racial bias, can be inherited by AI systems.	Elena speaks to the camera	
3	For example, face recognition systems have been shown to misclassify darker-skinned females exhibiting gender and ethnicity bias.	voice over	https://www.storyblocks.co m/images/stock/carbon-blue -gear-havgpsf4muwj6gl5uff + red cross https://www.storyblocks.co m/images/stock/young-afric an-british-woman-in-the-wo ods-s3xbm-cjfdkhfsbp3x + https://www.storyblocks.co m/images/stock/beautiful-af



Väljakutsed



Tom Spits

- Koordineerimine
- Tähtajad
- Intervjuud ekpertidega
- Filmimine erinevates kohtades



Tänusõnad







Peter Van Ooijen



Laurène Ramos Martins



Rosa Verhoeven



Stefan Phillips



Tom Spits



Bart Scheerder



Jaak Vilo



Anna Leontjeva



Raivo Kolde



Marianna Laht



Mirjam Paales

Future

How Artificial Intelligence Can Support Healthcare



https://www.futurelearn.com/courses/how-artificial-intelligence-can-support-healthcare



















Teemad

