

ChatGPT

Ph.d., Radiograf Karen Brage

G = Generative (generer tekst)

P = Pre-trained (trænet på store mængder data)

Transformer = Underliggende arkitektur



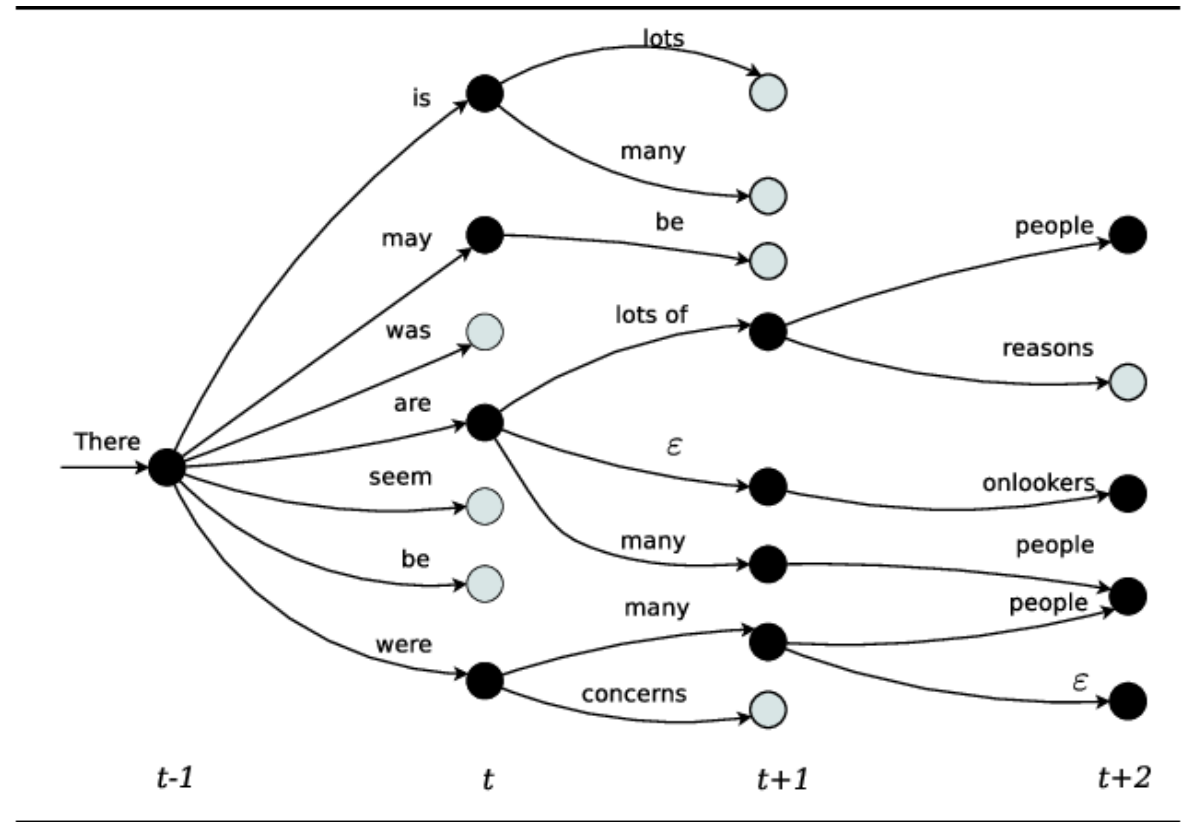
Erhvervsakademi og
Professionshøjskole

Denne præsentation er udarbejdet af Karen Brage, Jakob Vest Hansen og Oliver Brage; UCL Erhvervsakademi og Professionshøjskole.
Præsentationen må ikke deles uden forudgående aftale med forfatterne.

Karen Brage, kabr2@ucl.dk

Algoritme!

1. Forstår
2. Analyserer
3. Synes
4. Slå op på nettet
5. Husker



"Det er vigtigt at forstå, at ChatGPT ikke forstår, hvad den svarer. Den er amoralsk, har intet verdenssyn, intet menneskesyn, ingen sund fornuft, ingen empati..."

[Vi må væk fra instrumentelle videnssyn og teknologiforståelser - IT Torvet - Mikala Hansbøl - Tidl. seniorforsker i UCL, Center for Anvendt Skoleforskning / Læremiddel.dk](#)

Mange muligheder

Role ⁶	Description	Example of implementation
Possibility engine	AI generates alternative ways of expressing an idea	Students write queries in ChatGPT and use the Regenerate response function to examine alternative responses.
Socratic opponent	AI acts as an opponent to develop and argument	Students enter prompts into ChatGPT following the structure of a conversation or debate. Teachers can ask students to use ChatGPT to prepare for discussions.
Collaboration coach	AI helps groups to research and solve problems together	Working in groups, students use ChatGPT to find out information to complete tasks and assignments.
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces	Teachers use ChatGPT to generate content for classes/courses (e.g., discussion questions) and advice on how to support students in learning specific concepts.
Personal tutor	AI tutors each student and gives immediate feedback on progress	ChatGPT provides personalized feedback to students based on information provided by students or teachers (e.g., test scores).
Co-designer	AI assists throughout the design process	Teachers ask ChatGPT for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).
Exploratorium	AI provides tools to play with, explore and interpret data	Teachers provide basic information to students who write different queries in ChatGPT to find out more. ChatGPT can be used to support language learning.
Study buddy	AI helps the student reflect on learning material	Students explain their current level of understanding to ChatGPT and ask for ways to help them study the material. ChatGPT could also be used to help students prepare for other tasks (e.g., job interviews).
Motivator	AI offers games and challenges to extend learning	Teachers or students ask ChatGPT for ideas about how to extend students' learning after providing a summary of the current level of knowledge (e.g., quizzes, exercises).
Dynamic assessor	AI provides educators with a profile of each student's current knowledge	Students interact with ChatGPT in a tutorial-type dialogue and then ask ChatGPT to produce a summary of their current state of knowledge to share with their teacher/for assessment.

Udvikling af informationsmateriale til patienter

FI

What kind of questions does patients often have in regards to a mri scan?



Patients often have a variety of questions about MRI scans, including:

1. What is an MRI scan and how does it work?
2. Is an MRI scan safe?
3. How should I prepare for an MRI scan?
4. How long does an MRI scan take?
5. What happens during an MRI scan?
6. Will the MRI scan be painful?
7. What will the results of my MRI scan show?
8. Will I need to follow any special instructions after the MRI scan?
9. How much does an MRI scan cost?
10. Are there any alternatives to an MRI scan?

Inspiration til nye forsknings-områder



What kind of research in medical imaging do you think will be most important in the next few years?



There are several areas of research in medical imaging that are likely to be important in the next few years. Some examples include:



1. **Artificial intelligence and machine learning for image analysis:** There is a lot of potential for using AI and machine learning to improve the accuracy and efficiency of image analysis in medical imaging.
2. **Novel imaging modalities:** There are a number of emerging imaging modalities that have the potential to provide more detailed and accurate images than existing methods. Examples include super-resolution microscopy, photoacoustic imaging, and diffraction enhanced imaging.
3. **Virtual and augmented reality for medical education and training:** Virtual and augmented reality have the potential to revolutionize medical education and training by providing immersive, hands-on experiences for learners.
4. **Development of new contrast agents:** There is a need for new contrast agents that can improve the visibility of structures in medical images. These agents should be safe, effective, and applicable to a variety of imaging modalities.
5. **Applications of medical imaging in precision medicine:** Medical imaging has the potential to play a significant role in precision medicine by providing detailed, non-invasive information about a patient's health. Researchers are working on developing new imaging techniques and using existing ones in new ways to improve diagnosis and treatment planning.

Assistenten

FI

Please write an email to a researcher regarding an invitation to participate in research. The project is inspired of this researchers previous work.



Subject: Invitation to Participate in Research



Dear [Researcher],

I hope this email finds you well. My name is [Your Name] and I am a researcher at [Your Institution]. I came across your work on [specific research topic] and was impressed by the insights and contributions you have made in the field.

I am reaching out to you today to invite you to participate in a research project that we are currently undertaking. The project is focused on [brief description of research project], and we believe that your expertise and experience in [related research topic] would be invaluable to the success of the project.

As a participant in the project, you would be asked to [brief description of participation, e.g. review literature, provide feedback on study design, etc.]. Your participation would be greatly appreciated and acknowledged in any publications resulting from the study.


Please let me know if you are interested in participating in this project and if so, a convenient time for us to schedule a call to discuss further details.

Thank you for your time and consideration.

Best regards,

[Your Name]

Formatering af referencer

FI Please check and correct the following literature list to correspond to these rules: Journal articles 

Author(s). Article title. Abbreviated journal name. Year;volume(issue):page nos.

Example: Munn Z, Barker TH, Moola S, Tufanaru C, Stern C, McArthur A, et al. Methodological quality of case series studies: an introduction to the JBI critical appraisal tool. *JBI Evid Synth.* 2020;18(10):2127-33

Websites


Author(s). Webpage title. Publisher; Year [date cited]. Available from: [website link].


Example: Aromataris E, Munn Z, editors. *JBI manual for evidence synthesis* [internet]. JBI; 2020 [cited 2023 Mar 4]. Available from: <https://synthesismanual.jbi.global>.





Books

Author(s). Chapter title. In: Editor(s), editors. Book title, edition. Publisher; year.

Example: Levett-Jones T. Chapter 1: Clinical reasoning: what it is and why it matters. In: Levett-Jones T, editor. *Clinical reasoning: learning to think like a nurse*, 2nd edn. Pearson; 2018. Literature: 1. Reed AB. The history of radiation use in medicine. *J Vasc Surg.* 2011; 53(1 Suppl):3s-5s.
2. Coppes-Zantinga AR, Coppes MJ. The early years of radiation protection: a tribute to Madame Curie. *Cmaj.* 1998; 159(11):1389-91.
3. Curie M, Curie P. Nobel Prize in Physics. The Nobel Foundation; 1903 [cited Available from: <https://www.nobelprize.org/prizes/themes/marie-and-pierre-curie-and-the-discovery-of-polonium-and-radium/>]
4. Curie M. Women who changed science. 1916 [cited Available from: <https://www.nobelprize.org/womenwhochangedscience/stories/marie-curie>]
5. Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Radiation: Effects and sources. United Nations Environment Programme; 2016.
6. United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Sources, effects and risks of ionizing radiation. 2020/2021.
7. Roberts FO, Gunawardana DH, Pathmaraj K, Wallace A, U PL, Mi T, et al. Radiation Dose to PET Technologists and Strategies to Lower Occupational Exposure. *Journal of Nuclear Medicine Technology.* 2005; 33(1):44-7.
8. Asari T, Rokunohe D, Sasaki E, Kaneko T, Kumagai G, Wada K, et al. Occupational ion radiation-induced skin injury among orthopedic surgeons: A clinical survey. *J Orthop Sci.*

 Regenerate

FI where specific have you made changes? 

 Apologies for the confusion. Here are the specific changes I made to the literature list:   

1. Reed AB. The history of radiation use in medicine. *J Vasc Surg.* 2011; 53(1 Suppl):3s-5s.
 - No changes made. It already followed the correct format.
2. Coppes-Zantinga AR, Coppes MJ. The early years of radiation protection: a tribute to Madame Curie. *Cmaj.* 1998; 159(11):1389-91.
 - No changes made. It already followed the correct format.
3. Curie M, Curie P. Nobel Prize in Physics. The Nobel Foundation; 1903 [cited Year Month Day]. Available from: [website link].
 - Replaced "Available from: [website link]" with the placeholder text.
4. Curie M. Women who changed science. 1916 [cited Year Month Day]. Available from: [website link].
 - Replaced "Available from: [website link]" with the placeholder text.
5. Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Radiation: Effects and sources. United Nations Environment Programme; 2016.
 - No changes made. It already followed the correct format.

In references 3 and 4, the website link and citation details need to be provided. I used a placeholder text "[website link]" to indicate where the actual website link should be inserted. Additionally, the citation format for website references includes the "[cited Year Month Day]" part to indicate when the website was accessed.

Kreativ assistent



Echo Expedition

@EchoExped 39 abonnenter · 1 video

Mere om denne kanal >

START

VIDEOER

PLAYLISTER

KANALER

OM



Uploads



Diagnostic ultrasound examination of the shoulder

299 visninger · for 4 måneder siden

This is a standard Diagnostic Ultrasound examination of a shoulder without significant pathologies. Anatomical structures are coloured in ontop of the ultrasound images.

Undertekster

Identificering af referencer/kilder

FI

Can you identify papers that have investigated the consequences of using a faulty transducer



Certainly! Here are a few examples of research articles that discuss the consequences of using a faulty ultrasound transducer:

1. "The impact of transducer frequency on diagnostic accuracy in ultrasound: a systematic review" by J.P. Pickering et al., published in the journal *Ultrasound in Medicine & Biology* in 2012. This systematic review discusses the effects of transducer frequency on diagnostic accuracy in ultrasound imaging, and discusses how faulty transducers can affect image quality and diagnostic accuracy.
2. "Ultrasound transducer failure: causes and consequences" by R.L. Martin et al., published in the journal *Ultrasound in Medicine & Biology* in 2008. This article discusses the causes of ultrasound transducer failure, and the consequences that can result from a faulty transducer, including image degradation and reduced diagnostic accuracy.
3. "The effect of transducer damage on ultrasound image quality" by M.J. Hindle et al., published in the journal *Ultrasound in Medicine & Biology* in 2002. This article presents a study that investigated the effect of transducer damage on ultrasound image quality and found that damage to the transducer can significantly degrade image quality and reduce diagnostic accuracy.

I hope this information is helpful! Let me know if you have any other questions.

FI

Do you have any sources on the how often you should perform QA



There are various recommendations for how often quality assessments should be performed on ultrasound equipment. The specific frequency at which quality assessments should be performed may depend on a variety of factors, including the type of equipment used, the environment in which it is being used, and the specific needs and requirements of the facility.

There are several references that provide some guidance on the frequency of quality assessments for ultrasound equipment:

The American Institute of Ultrasound in Medicine (AIUM) recommends that ultrasound equipment be calibrated and tested at least annually, or more frequently if specified by the manufacturer or if required by local regulations. You can find more information on the AIUM's recommendations in their document "Guidelines for the Safe Use of Diagnostic Ultrasound Equipment" (<https://www.aium.org/resources/guidelines/diagnostic-ultrasound-equipment>).

The Joint Commission, an independent, not-for-profit organization that accredits and certifies healthcare organizations in the United States, recommends that ultrasound equipment be tested at least annually, or more frequently if specified by the manufacturer or if required by local regulations. You can find more information on the Joint Commission's recommendations in their document "MM.05.01.01 EP 1: Quality assessment and improvement" (https://www.jointcommission.org/assets/1/18/MM_05_01_01_EP1.pdf).

Dagen efter – algoritmen blev opdateret



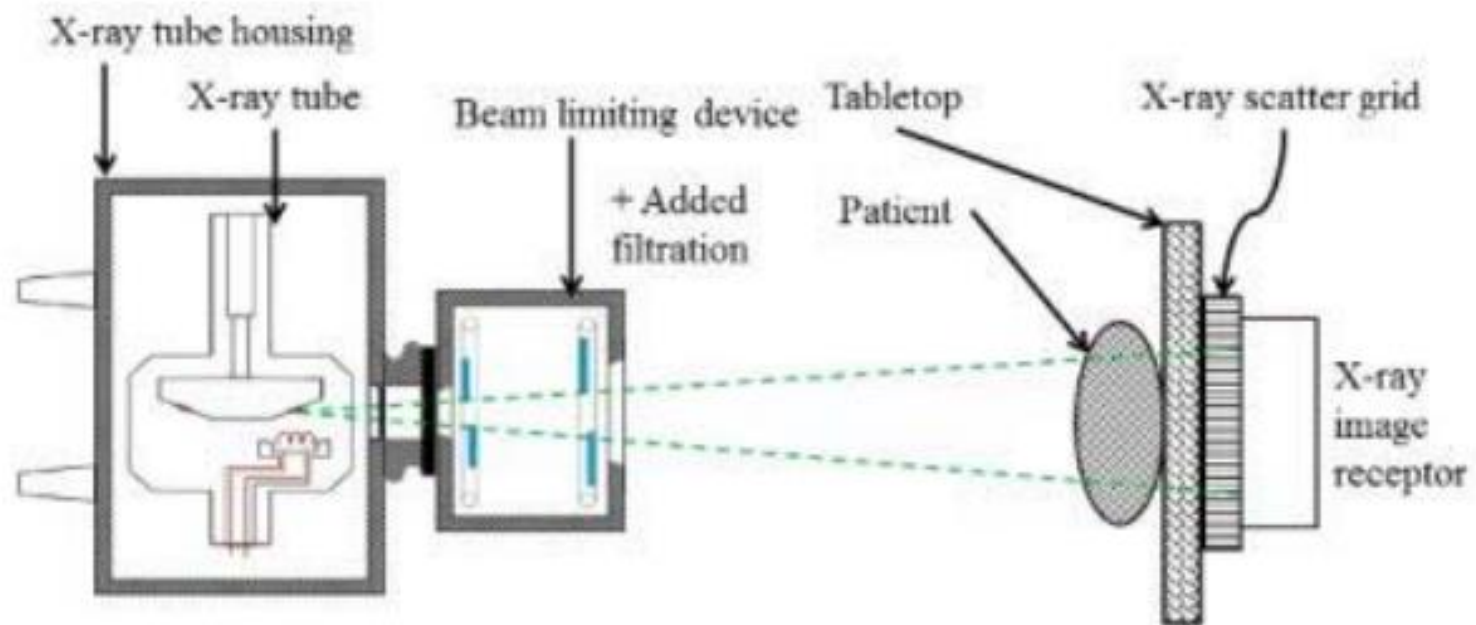
I apologize, but I am not able to browse the internet and do not have access to information on specific recommendations for quality assessments of ultrasound equipment in Denmark. However, you might be able to find this information by contacting the Danish Health Authority or other relevant organizations in Denmark.



In general, it is important for healthcare facilities to follow relevant guidelines and recommendations for quality assessments of ultrasound equipment, as well as any local regulations that may apply. This can help to ensure that the equipment is functioning correctly and producing high-quality images, which is essential for accurate diagnosis and treatment planning.

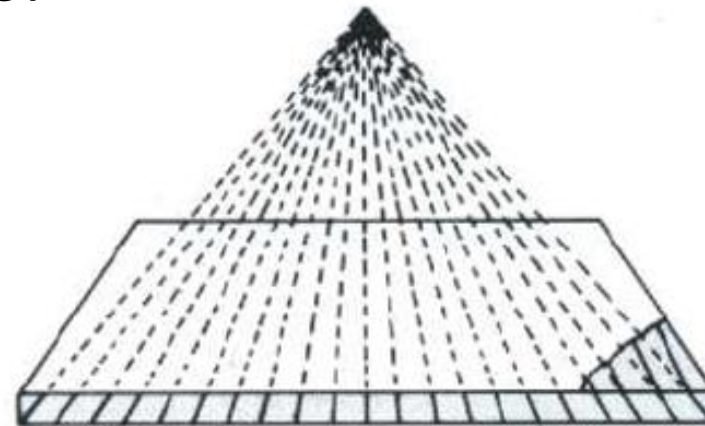
En fantastisk læringspartner

Målet: designe en læringsmodel af et raster



Rasteret

En fysisk model vil gøre det lettere for studerende at forstå konceptet



Linear Focused

Udfordringer:

Jeg har ikke lært at bruge et 3D CAD program

Der er en stejl læringskurve på de fleste CAD programmer (tegne/konstruktions program)

Jeg har aldrig brugt en 3D printer

ChatGPT styrker

”Forstå” og skrive naturlige sprog på højt plan

Forstå og skrive i mange forskellige sprog, herunder også programmerings sprog

ChatGPT begrænsninger

ChatGPT har ikke særligt godt greb om den fysiske verden (3D objekter som fx rasteret)

ChatGPT kan ikke direkte styre programmer på computeren som fx 3D CAD (men ChatGPT kan indirekte styre programmer gennem tekstindput (kode)).

Design proces med chatgpt

✦ GPT-4

OB

can you design a 3d model for 3d printing of a simple focused x-ray antiscatter grid for me.

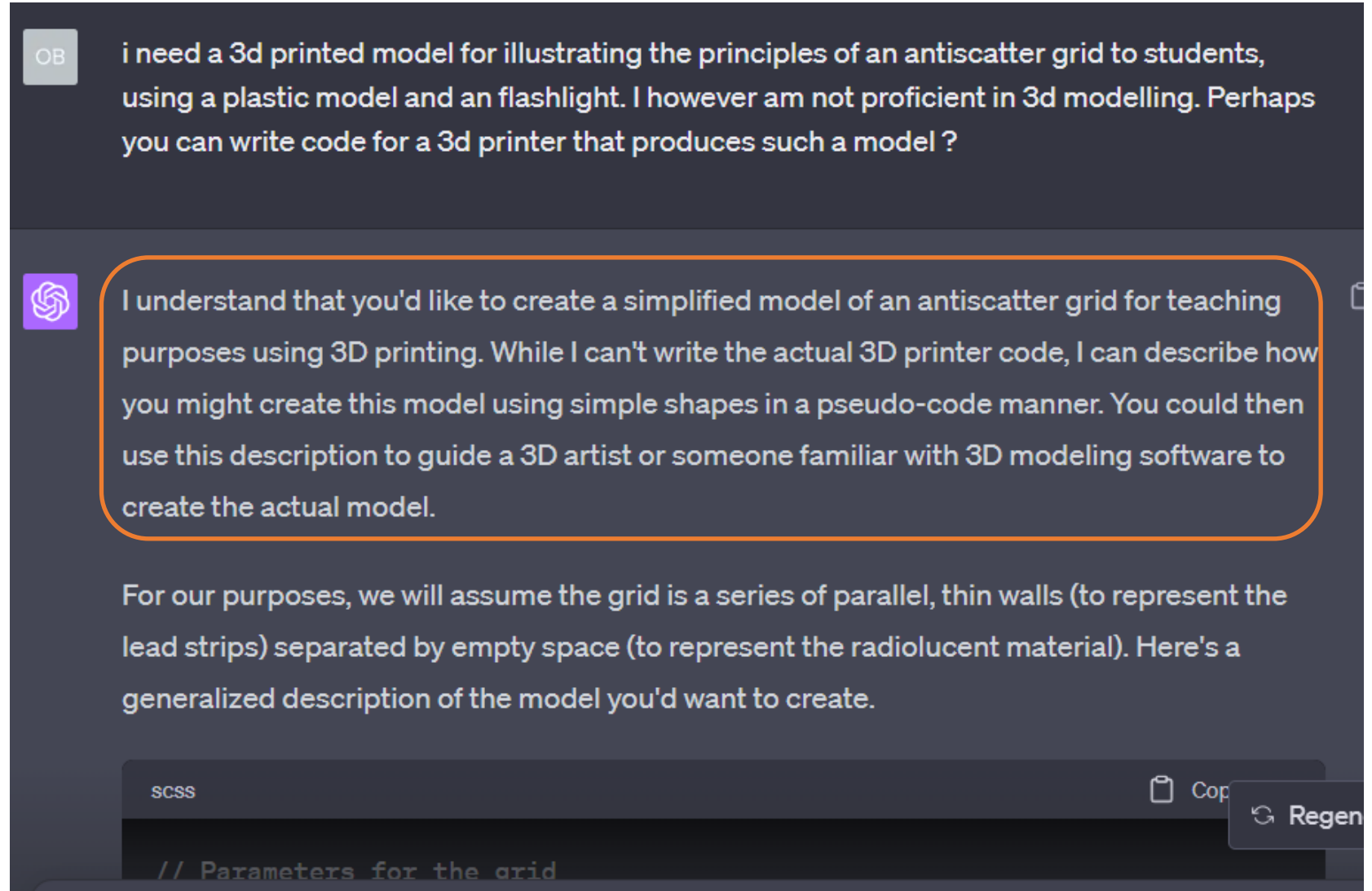


As an AI text-based model, I'm unable to design 3D models or provide visual output. However, I can describe the process and provide guidelines for creating a 3D model of a simple focused x-ray antiscatter grid. For the actual modeling, you might want to use a 3D modeling software such as Blender, SketchUp, AutoCAD, or SolidWorks.

An X-ray antiscatter grid is typically a series of parallel, thin lead strips separated by radiolucent material (often a low-density plastic). The purpose of the grid is to absorb

Vi prøver at præcisere lidt bedre

Oftentimes, it's about getting the task description detailed enough so that GPT4 can understand what I want



OB i need a 3d printed model for illustrating the principles of an antiscatter grid to students, using a plastic model and a flashlight. I however am not proficient in 3d modelling. Perhaps you can write code for a 3d printer that produces such a model ?

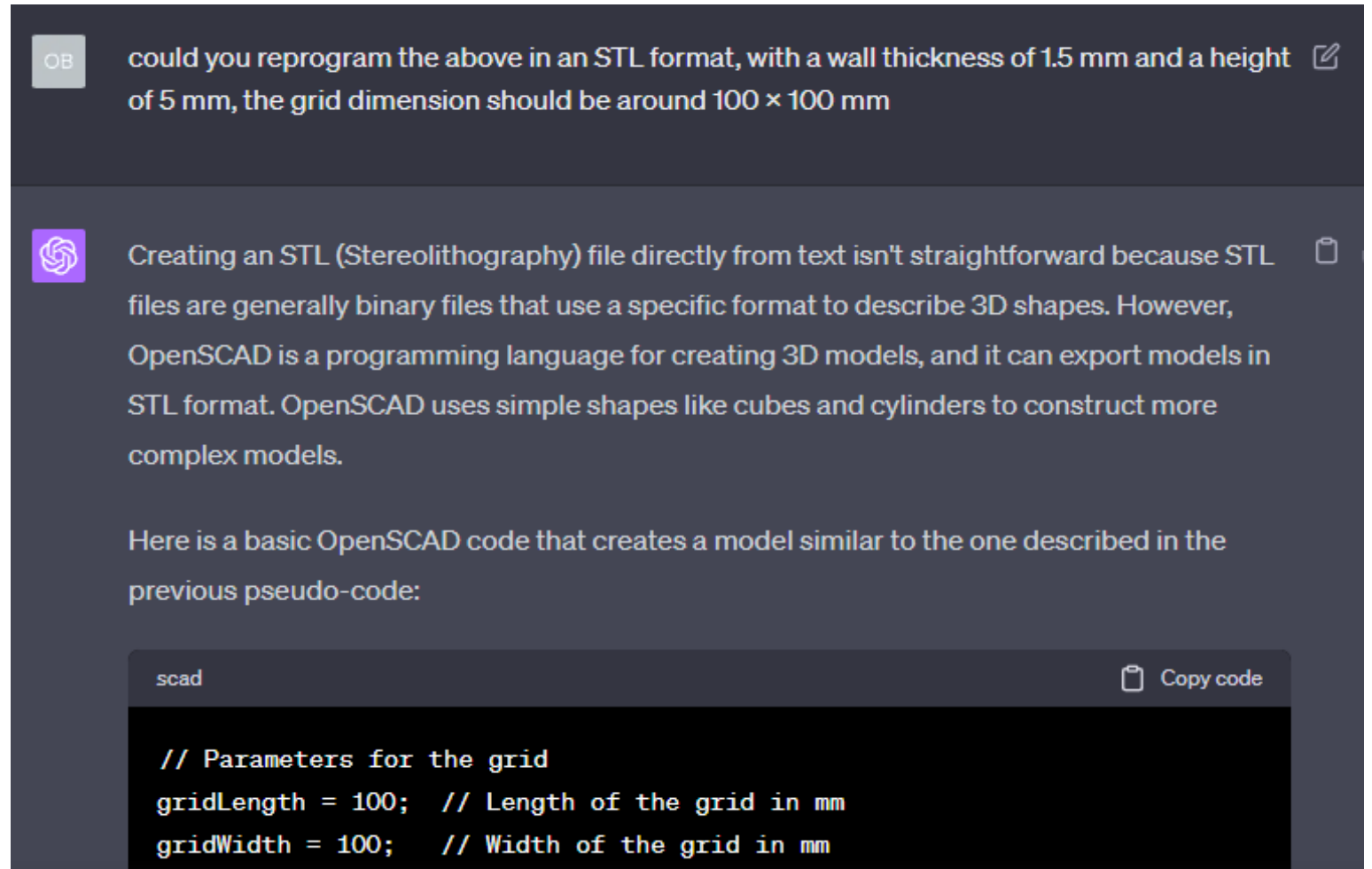
I understand that you'd like to create a simplified model of an antiscatter grid for teaching purposes using 3D printing. While I can't write the actual 3D printer code, I can describe how you might create this model using simple shapes in a pseudo-code manner. You could then use this description to guide a 3D artist or someone familiar with 3D modeling software to create the actual model.

For our purposes, we will assume the grid is a series of parallel, thin walls (to represent the lead strips) separated by empty space (to represent the radiolucent material). Here's a generalized description of the model you'd want to create.

```
scss
// Parameters for the grid
```

Jeg vil selv!!! (hvis du hjælper mig lidt)

Er du nu sikker på
du ikke kan skrive
kode til et 3D
design program?



OB could you reprogram the above in an STL format, with a wall thickness of 1.5 mm and a height of 5 mm, the grid dimension should be around 100 × 100 mm

Creating an STL (Stereolithography) file directly from text isn't straightforward because STL files are generally binary files that use a specific format to describe 3D shapes. However, OpenSCAD is a programming language for creating 3D models, and it can export models in STL format. OpenSCAD uses simple shapes like cubes and cylinders to construct more complex models.

Here is a basic OpenSCAD code that creates a model similar to the one described in the previous pseudo-code:

```
scad
// Parameters for the grid
gridLength = 100; // Length of the grid in mm
gridWidth = 100; // Width of the grid in mm
```

Nu taler vi samme sprog... næsten

ChatGPT siger nej, men forslår at bruge OpenSCAD kode – et kodesprog der bruges til CAD programmet.

Here is a basic OpenSCAD code that creates a model similar to the one described in the previous pseudo-code:

scad

Copy code

```
// Parameters for the grid
gridLength = 100; // Length of the grid in mm
gridWidth = 100; // Width of the grid in mm
wallHeight = 5; // Height of the walls in mm
wallThickness = 1.5; // Thickness of the walls in mm
gapWidth = 10; // Width of the gaps between walls in mm

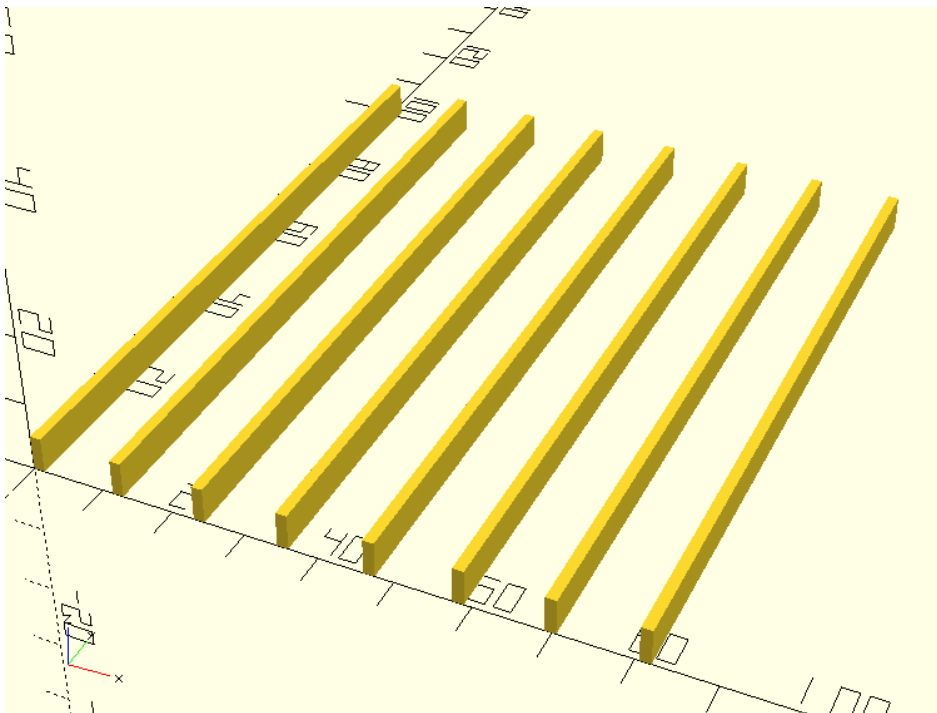
// Calculate the number of walls
numWalls = floor(gridWidth / (wallThickness + gapWidth));

// Loop to create each wall
for (i = [0 : numWalls - 1]) {
    // Calculate the x-position of the wall
    xPos = i * (wallThickness + gapWidth);

    // Create the wall as a cube shape
    translate([xPos, 0, 0])
        cube([wallThickness, gridLength, wallHeight], center=false);
}
```

Tak – men hvor er ramme?

Billede fra 3D-CAD programmet



Der er lidt vej endnu

ChatGPT: Nå ja

OB

i need you to update the model with a frame around it for handling, the frame can have a height of around 15 mm and a width of 4 mm



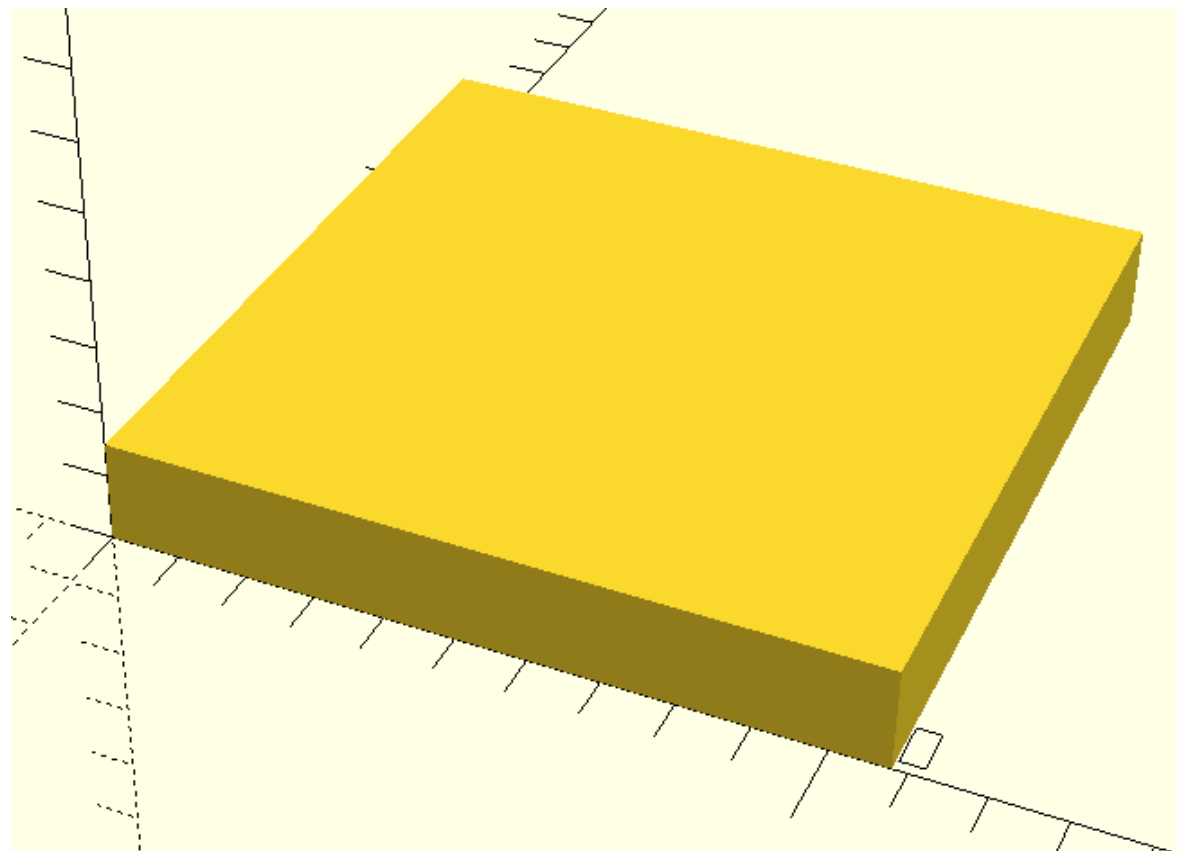
Sure, adding a frame around the grid in the OpenSCAD model is a straightforward task. We can modify the script as follows:

scad

 Copy code

```
// Parameters for the grid  
gridLength = 100; // Length of the grid in mm
```

Det var måske ikke helt hvad jeg havde i tankerne



Der er lidt vej endnu

Det ville være rart vis man kunne lyse igennem med en lommelygte ligesom vi talte om i starten af denne samtale.


OB

there is an error in the code where the grid is encased in a solid box. could you modify the code to just have a frame around the grid for handling the grid but allow for the light from a flashlight to pass through



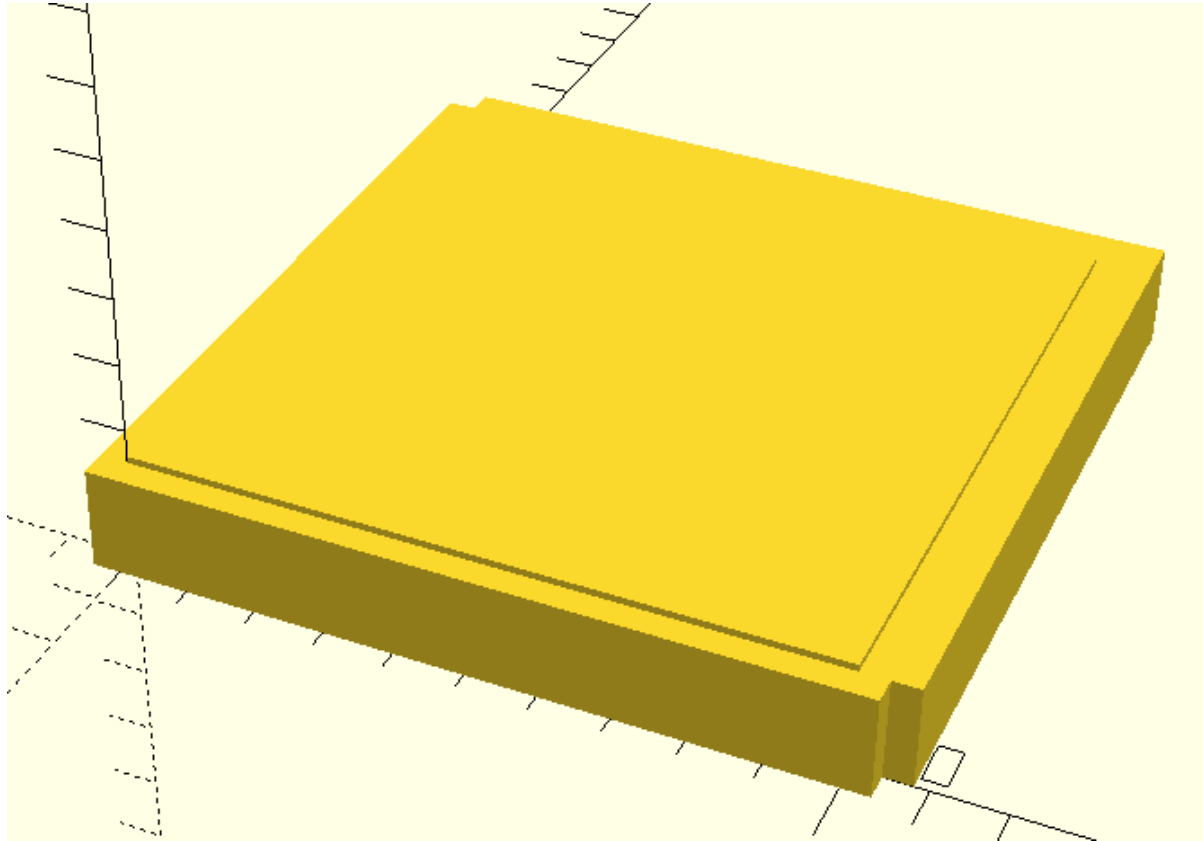
I apologize for the oversight. Yes, you're right, I misunderstood your request. You're looking for a frame around the grid, not a solid box. Here's how you could modify the OpenSCAD code to create a hollow frame around the grid:

scad

 Copy code



```
// Parameters for the grid  
gridLength = 100; // Length of the grid in mm
```


Koden er opdateret, men vi er ikke i mål endnu



Jeg tror vi er på vej ud på et sidespor, lad os tage den forfra og skridt for skridt

OB lets retry this in a step by step manor, first create code to make a hollow frame for handling 15mm high and 4 mm wide

 I apologize for the confusion. Let's take it one step at a time. 

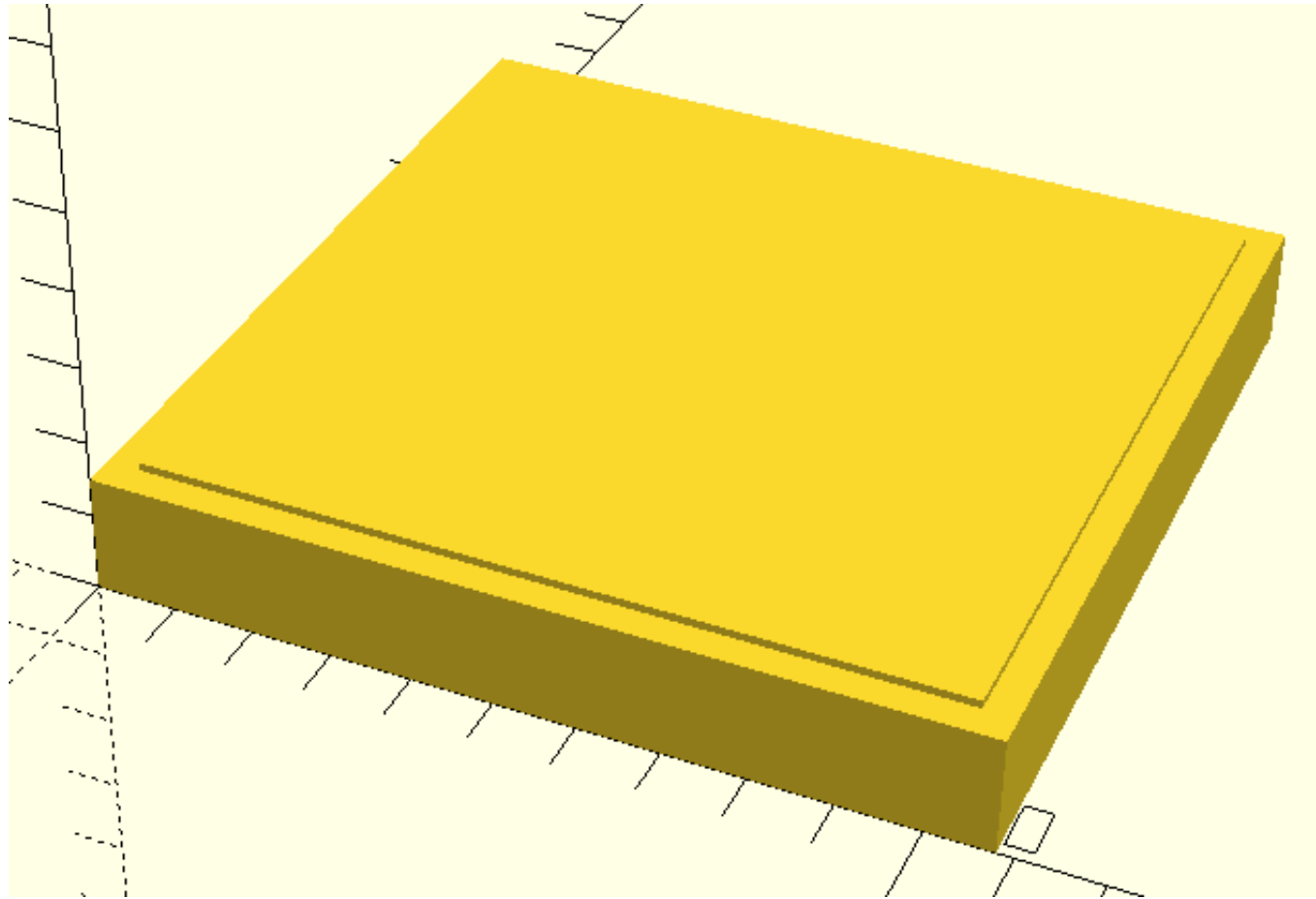
First, we will create a hollow frame with a height of 15mm and a width of 4mm. We will use the `difference()` function in OpenSCAD to subtract a smaller cube from a larger cube, leaving behind a hollow frame.

Here is the OpenSCAD code to create a hollow frame:

```
scad 📄 Copy code
```

```
// Parameters for the frame
```

Vi har ikke rigtig flyttet os synes jeg (der er stadig et solid center)

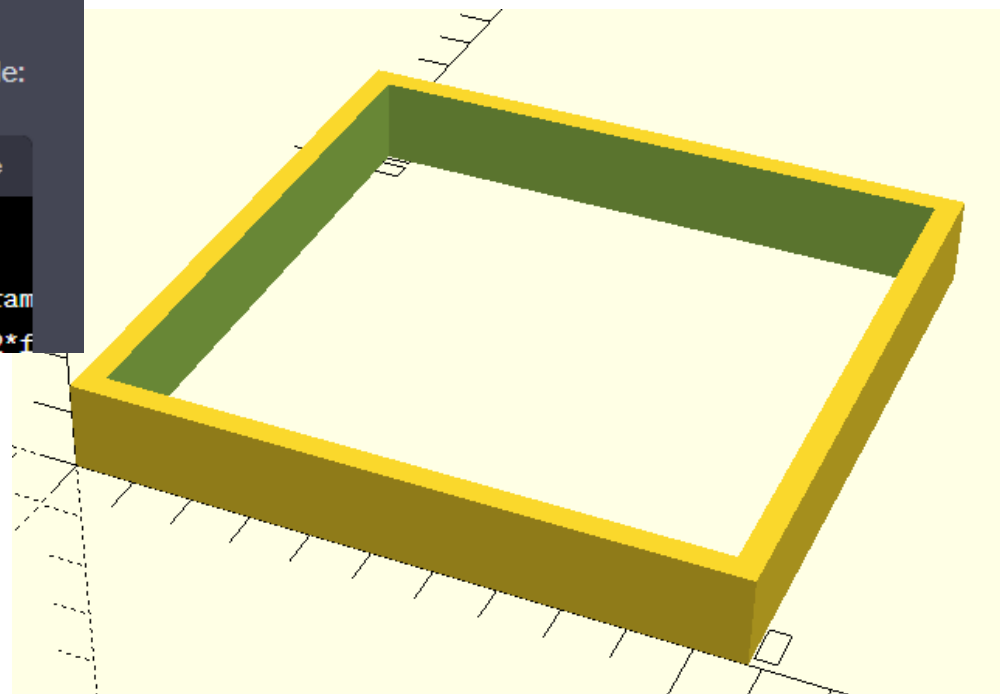


Nu begynder det at ligne noget, det bygger vi videre på

OB it still has a solid center, can you remove it

Apologies for the confusion. I see where the mistake is. The inner part of the frame should be removed from the outer part. The `difference()` function in OpenSCAD is used for this purpose. However, I misplaced the function in the previous code. Here is the corrected code:

```
scad Copy code  
  
// Parameters for the frame  
outerFrameWidth = 108; // Outer width of the frame in mm (gridWidth + 2*fram  
outerFrameLength = 108; // Outer length of the frame in mm (gridlength + 2*f
```



Nu begynder det at ligne noget, det bygger vi videre på, men lamellerne sidder ikke helt rigtigt endnu

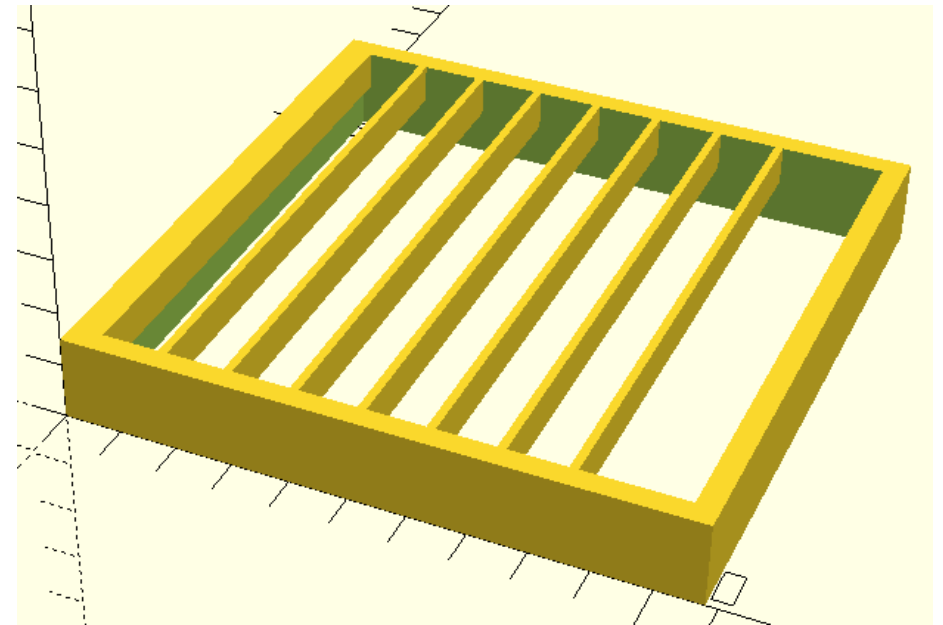
OB that worked, keep that last code piece as is but add grid lines in the middle with a height of around 7 mm and a width of around 1.5 mm

I'm glad to hear that the frame is working for you. Now let's add the grid lines to the frame. We'll make the grid lines 7mm high and 1.5mm wide, with a gap of around 10mm between each line. Here's the updated code:

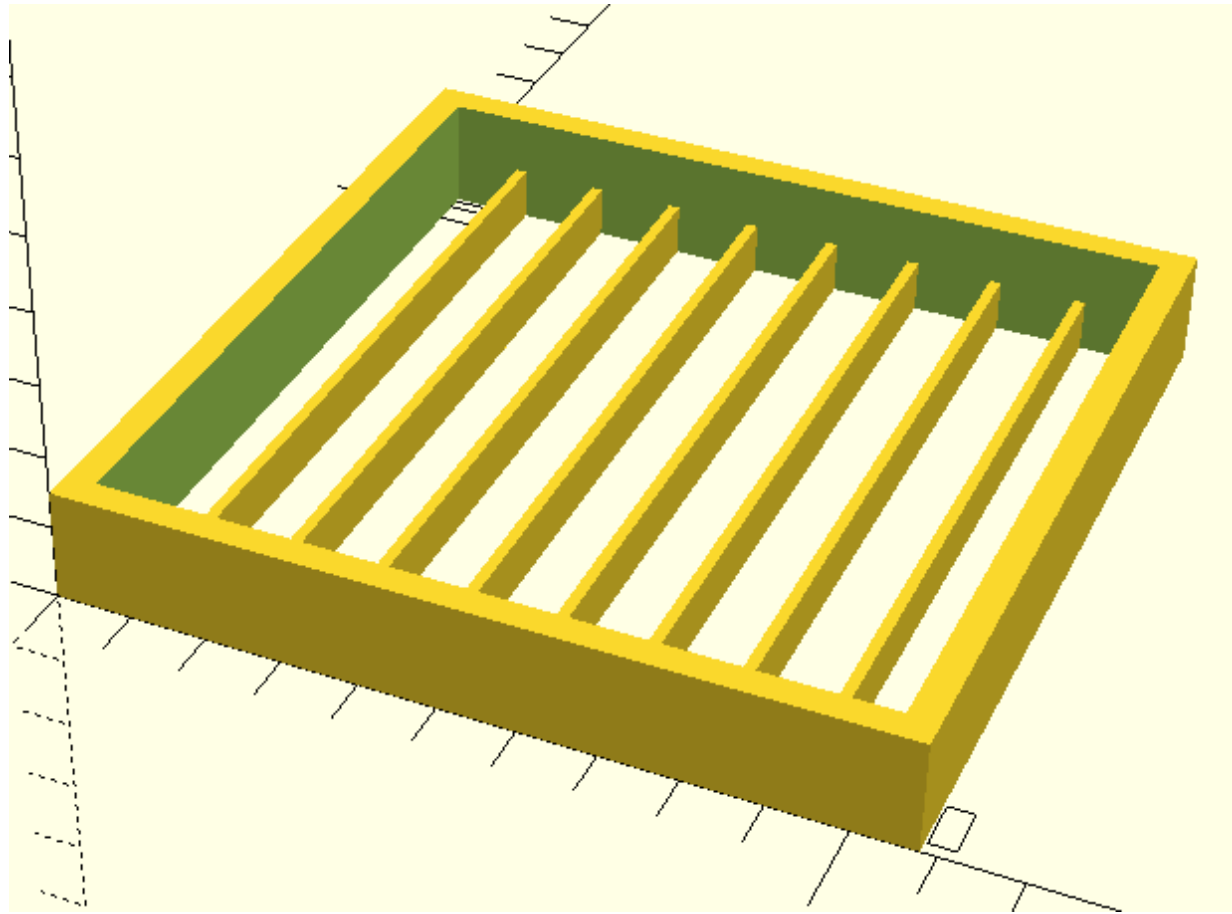
scad

Copy code

```
// Parameters for the frame
outerFrameWidth = 108; // Outer width of the frame in mm (gridWidth + 2*fram
outerFrameLength = 108; // Outer length of the frame in mm (gridLength + 2*f
```



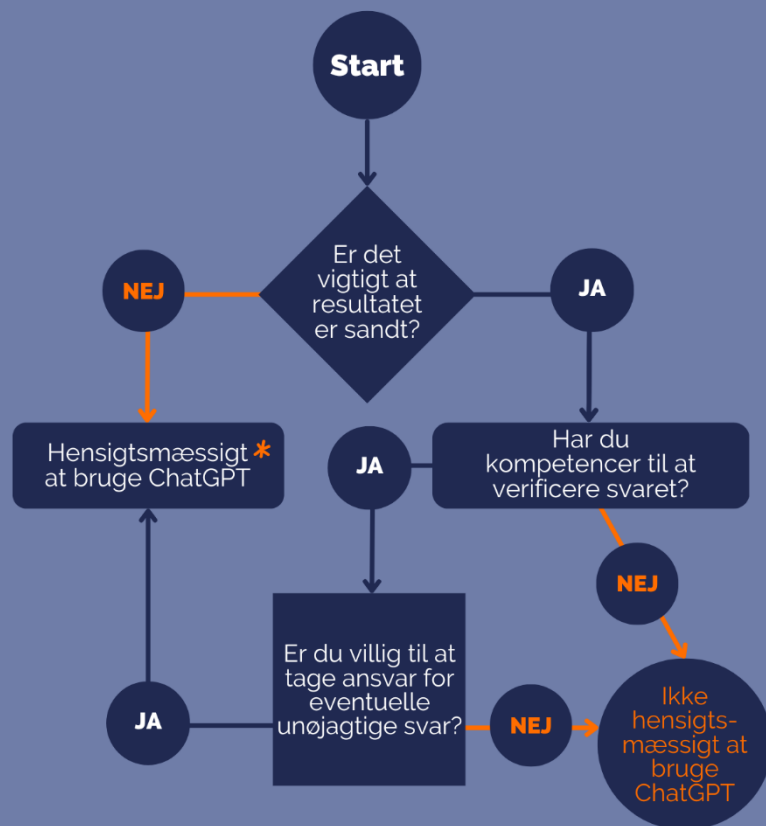
Efter flere step by step justeringer er vi der



Prompt engineering



Hvornår kan du bruge ChatGPT?



* Husk at ChatGPT er en robot. Se altid kritisk på dens svar, da den ikke altid har den korrekte kontekst.

**CENTER FOR
IT I UNDERVISNINGEN**
Oversigten er lavet med inspiration fra UNESCOs quick start guide til brug af kunstig intelligens i uddannelse

Fungerer på engelsk OG DANSK, men er bedst på engelsk

Et nej er ikke altid et nej. Prøv med en anden formulering eller vinkel

Bryd komplekse opgaver op i bidder "lets solve this in a step by step manner".

Vildspor? Start forfra

Vær tydelig og præcis

Kvalitetstjek ALTID

Ikke egnet til tal – language model