TEK830 Digitalization and AI in practice

SKAPA

The future of product images

Team 12, Max Dreifeldt, Mandus Högberg, Max Levin,
Jonatan Markusson, Alexander Muhr, William Norland

The problem - Financial factors

- Taking good images is hard and resource intensive.
  - Cameras and studios are expensive.
  - Photographers need experience and training.

The problem - Cultural factors

- Images used in a certain geographical area might not be culturally viable in another.
  - Buyers want to see the product they are buying in a living room that looks like their own.
  - Taking pictures of the product in different environments is a cost multiplier.

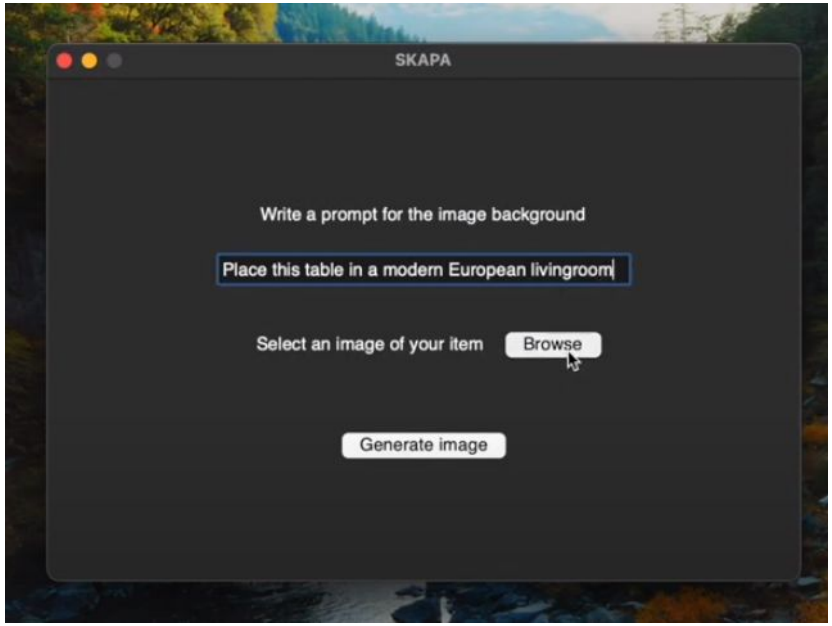
The solution - Introduction

- Harnessing the power of AI to aid and supplement the image producing process.
- AI is becoming increasingly more available, it’s easier to use and cheaper than ever before.
- Using AI to generate images can be a climate net positive if used resourcefully, it can also be easily climate compensated.

The solution - SKAPA

- A Software ecosystem that produces, stores, distributes images without any need for trained designers or photographers.
  - Supports image rating from clients using the images.
  - Continuous AI-model improvement through fine-tuning using data gathered from the ecosystem.
  - Easy to use and fully integratable with existing technologies.

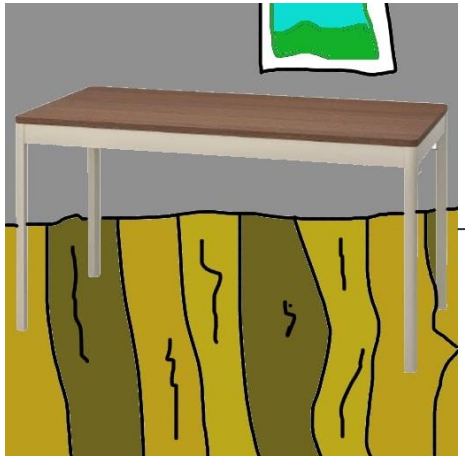
The solution - Prototype



- Simple utilitarian GUI.
- Locally run AI Model based on the Stable diffusion v.1.5 model. Able to generate pictures with less than 8GB of RAM.
- Pipelines generated images to a SQL database server ready to be queried by clients!

The solution - Prototype

IKEA - Table



“Table in a living room, european, cozy

A very crude hand drawn background

Appendix A: Usability

This project deals with a very new technology that is difficult to understand without a deep knowledge of software development and AI. The end goal for this project is a product that requires little to no programming skills. That is why we in our research have reached out to people who work in design and marketing and asked what problems they face when creating ads etc. Our way of solving this have been to create a simple and sleek graphical interface that allows users with no prior AI experience to create prompts and generate images that are stored in a database and can be used by other clients.

Appendix B: Feasibility

This product is very scalable and therefore works more as a proof of concept than a finished AI tool as we are limited by factors such time, money and other resources. While the AI model might not be able to compete with the most common models on the market right now, that is something that IKEA very easily can fix with their resources. Our product is similar to a computer in a way. By replacing say a graphical component it is possible to keep using the same computer. The same is true for our product by replacing the AI model. The main cost of this product is the license for the AI itself which is why this product is referred to as a proof of concept.

Appendix C: Viability

We have looked at key values for IKEA and worked a lot towards simplicity and staying relevant in a modern world. AI is very modern technology and have become a huge part of society. We are trying to make that technology more easily accessible for IKEA. IKEA works a lot towards simplicity which is a key element to our product. One sustainability issue that we have talked a lot about is the effect that training AI models have on the climate. training large models requires a lot of energy and our conclusion is that IKEA sits in a position to demand sustainably trained models and try to push in the right direction.

Appendix D: Interview Questions

1. **What do you work with? What is your role?**
2. **Could you describe your workflow?**
   (If your workflow changes frequently, please describe best and worst case scenarios.)
3. **Could you describe a typical set of pictures?**
   (What backgrounds are commonly used?)
4. **What is the most prevalent problem in your workflow?**
   (Please focus on issues related to product pictures, if applicable.)
5. **Would you appreciate an easy-to-use tool that allows the marketing team to write a prompt and generate a background using AI, onto which the product image can be placed, eliminating the need for a physical production set?**

References

- 1. Hage, S., Francl, T., Bardou, E., & Söderqvist, J. (2024). *IKEA X Chalmers Kickoff* [PowerPoint Slides]. Digitalization and AI in practice, Chalmers Tekniska Högskola. September 5.

- 2. Teigland, R., & Heathcote-Fumador, I. (2024). *Design Thinking* [PowerPoint Slides]. Digitalization and AI in practice, Chalmers Tekniska Högskola. September 10.

Our contact info

- Max Dreifeldt: maxdreifeldt02@gmail.com
- Mandus Högberg: mandus.hogberg@gmail.com
- Max Levin: maxle@student.chalmers.se
- Jonatan Markusson: jomarkusson@gmail.com
- Alexander Muhr: alle.muhr@gmail.com
- William Norland: williamnorland@gmail.com