

Tobias Ebsen **Selected Projects**
2014 - 2025

The Sound of Copenhagen **Københavns Museum**



The Sound of Copenhagen is an exhibition about the many sounds that are native to the Danish capital of Copenhagen. Throughout the exhibition the audience is presented with multi-channel soundscapes and ten interactive screens that let them dive into the many aspects of urban sounds.

The screens allow the audience to explore sounds, stories and images that tell the story of how sound has changed in Copenhagen through its history.

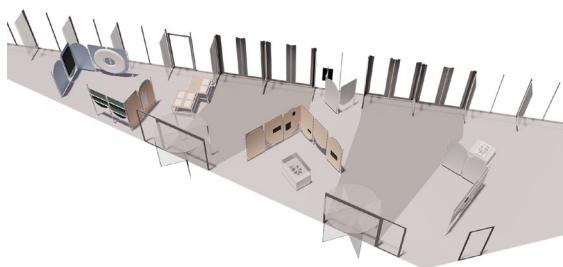
Role Tech lead, AV coordinator, software developer

Technologies Media players, dynamic lighting, front-end

Year 2025

Team Yoke, Profox

Børneriget Fonden Mary Elizabeths Hospital



The exhibition offers a rare and insightful look into the hospital's groundbreaking vision, highlighting its ambition to deliver a world-class healthcare experience. Yoke was responsible for designing the exhibition, taking on the role of exhibition partners to contribute to this important project. This initiative aims to redefine pediatric healthcare experiences and highlights the collaboration between design and healthcare innovation.

Role Technical project manager

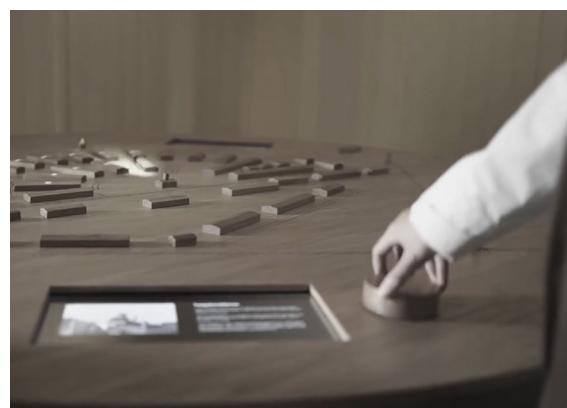
Technologies BrightAuthor

Year 2024

Team Yoke, Exponent, ProFox

Link www.yoke.dk/projects/the-childrens-hospital-of-the-future

Frøslevlejren Museum **Scale model**



Interactive table model, which uses projection, animation and custom soundscapes to create an engaging narrative. Visitors control a spotlight to illuminate the model, revealing various elements and stories, subtly bringing the table to life.

Built-in screens provide additional information with texts and images, offering deeper insights into the highlighted events and buildings.

Role Technical lead, IxD, software developer

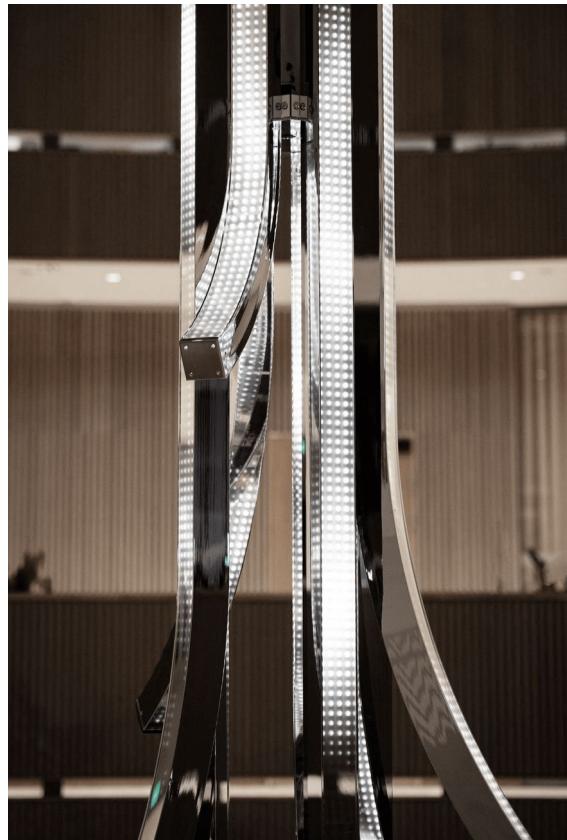
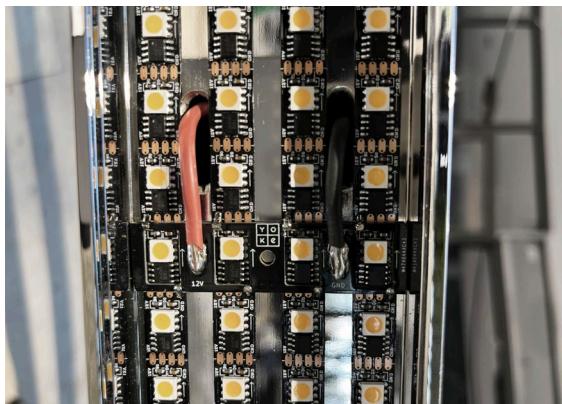
Technologies TouchDesigner, Python, Node.js, MQTT

Year 2024

Team Yoke, Kirkegaard Woodshop

Link www.yoke.dk/projects/froslevlejren-museum

Forskaran Livsåren



Livsåren was conceived as the centerpiece of Forskaran, a new hub in Stockholm dedicated to life science innovation and research. The 12 meter tall structure conveys the idea of neural pathways and signals. It consists of eight branches with a total of 27000 individual LED lights behind a double-mirror surface.

As you move beneath the artwork, your presence generates gentle pulses of light that ascend, contributing to the ever-evolving expression of this living organism.

Role Technical lead, software/hardware developer

Technologies TouchDesigner, Python, NodeJS, MQTT

Year 2023

Team Yoke, BK Teknik, Kläterservice AB

Link www.yoke.dk/projects/livsaaren

LEGO House Earcup



Custom earcups designed for LEGO House to fit into the overall design with LEGO bricks and studs as part of the History Collection exhibit at LEGO House.

Yoke created the exhibition design with accessibility in mind, featuring tactile activities, braille, and sign language to ensure inclusivity.

Role Hardware designer

Technologies CAD, laser cutting, assembly

Year 2023

Team Yoke, Kirkegaard Woodshop

Digital Hub Denmark **Visitor Center**



"Doing Digital Differently" is the manifest of Digital Hub Denmark and, thus, a natural part of the brief to design and develop their new visitor centre in Copenhagen.

The showroom features two interactive installations that are both visually spectacular and technically cutting edge. They use high resolution depth sensors to allow users to interact with their bodies without touching a screen or keyboard.



Role Technical lead, software developer

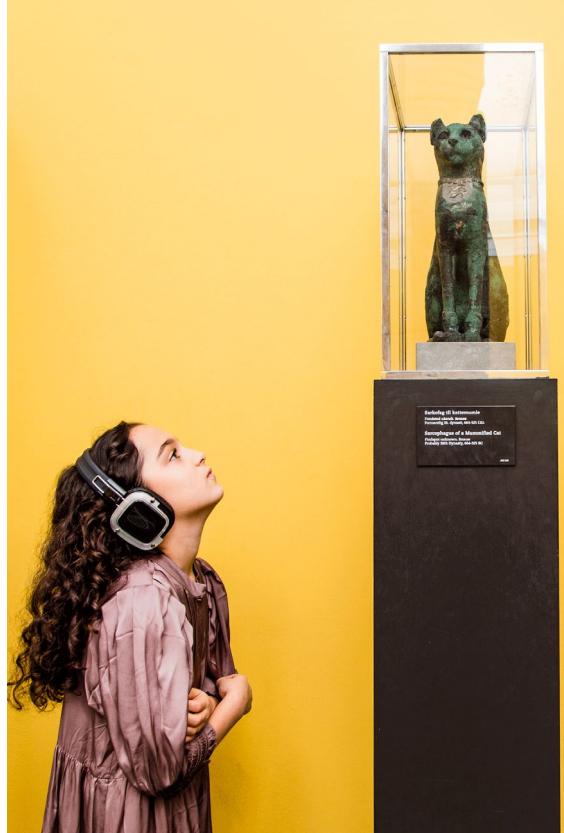
Technologies Unity, Computer Vision (OpenCV)

Year 2021

Team Yoke, Designit, Studio Marie Persson

Link www.yoke.dk/projects/dhd

Ny Carlsberg Glyptotek Listen!



The sound tells specific stories and creates moods and auditive backdrops for the art. With short animated films, objects, images, and light, visitors can hear, touch, feel and even smell the art.

Eighteen different sound installations, each consisting of an exhibition module, an audio narration, and a sensory experience were developed for Ny Carlsberg Glyptotek

Role Technical project manager, designer

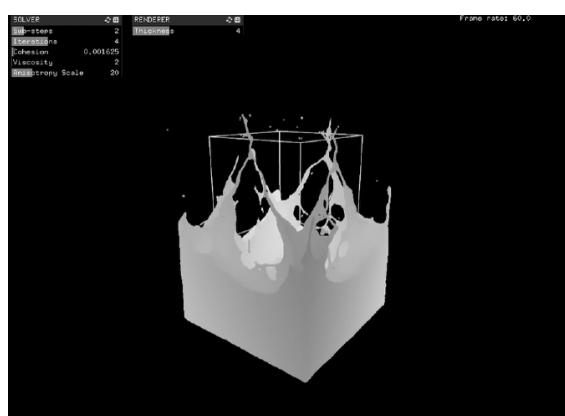
Technologies BrightAuthor, Arduino

Year 2021

Team Yoke, DR Scenografi

Link www.yoke.dk/projects/ny-carlsberg-glyptotek

IKEA Museum Our Roots



Through a strong aesthetic approach, the story of IKEA's roots unfolds in six thematic chapters.

Dynamic projections from floor to ceiling, historical objects, sounds and interactive experiences, teach visitors about the ingenuity of the poor farming community in Småland and how increasing prosperity led to new ideas about a better life at home.

Role Software developer

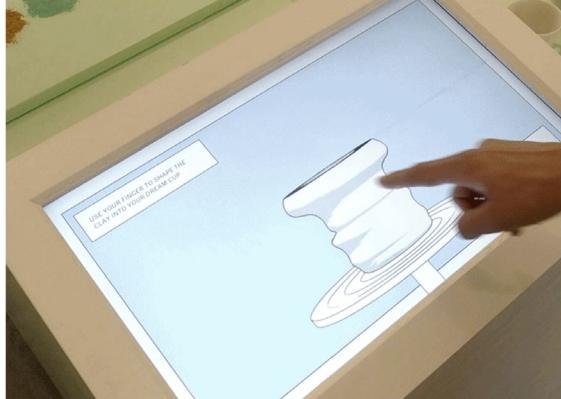
Technologies OpenGL, NVIDIA FleX, ToF sensor

Year 2021

Team Yoke

Link www.yoke.dk/projects/ikea-our-roots

Design Museum Denmark **In The Making**



By blending both traditional and digital elements, guests visitors are empowered to take on the role of a designer, crafting their own products and experiment with its functionality.

The exhibition revolves around three common objects: a cup, a lamp, and a bench. Each of these objects offers unique insights into the design process.

Role Tech lead, IxD, software developer

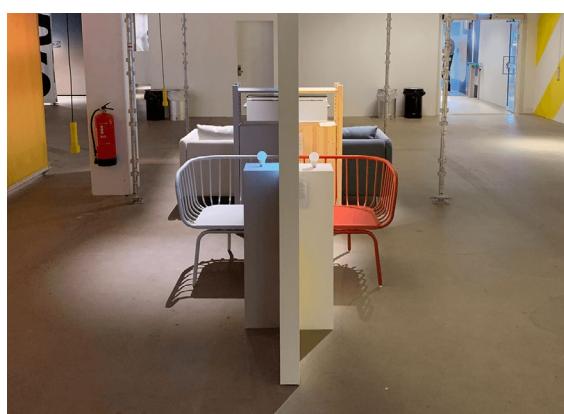
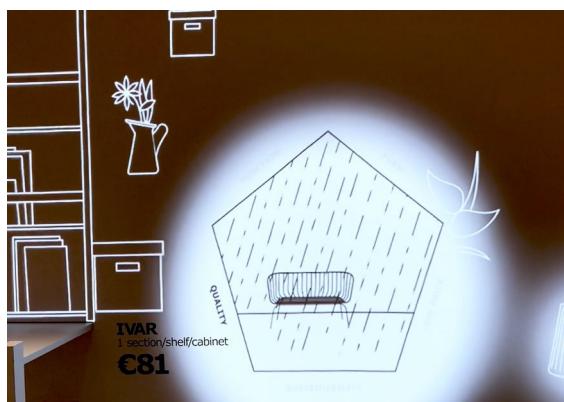
Technologies Unity, Shaders

Year 2021

Team Yoke, Kirkegaard Woodshop

Link www.yoke.dk/projects/dmd

IKEA Museum Democratic Design Days



Interactive installation exploring the dimensions of Democratic Design

With a special torch, visitors can magically unfold the story of a product. A new animation appears by pointing the torch at an idle animation on the wall, revealing how the particular product reflects the five dimensions of Democratic Design.

Role Tech lead, IxD, software developer

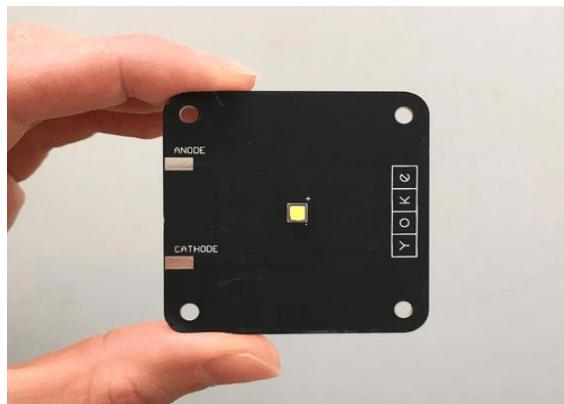
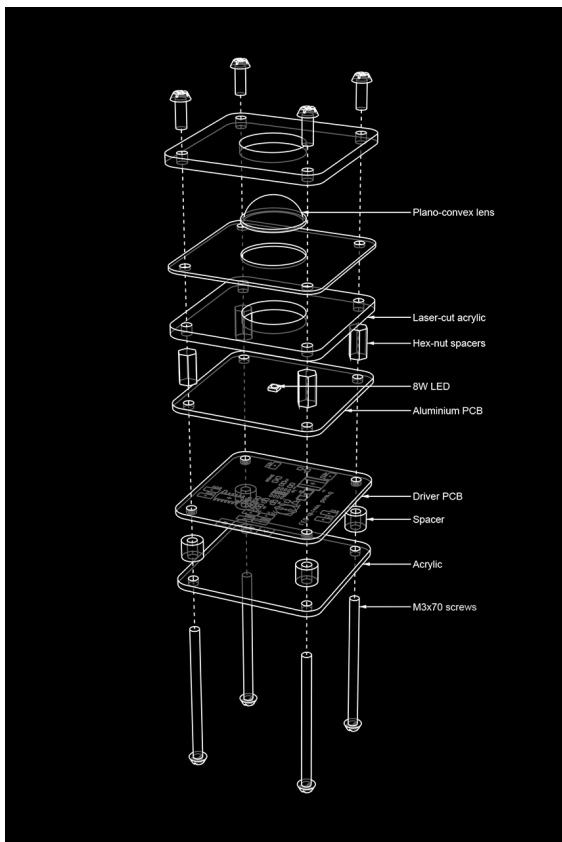
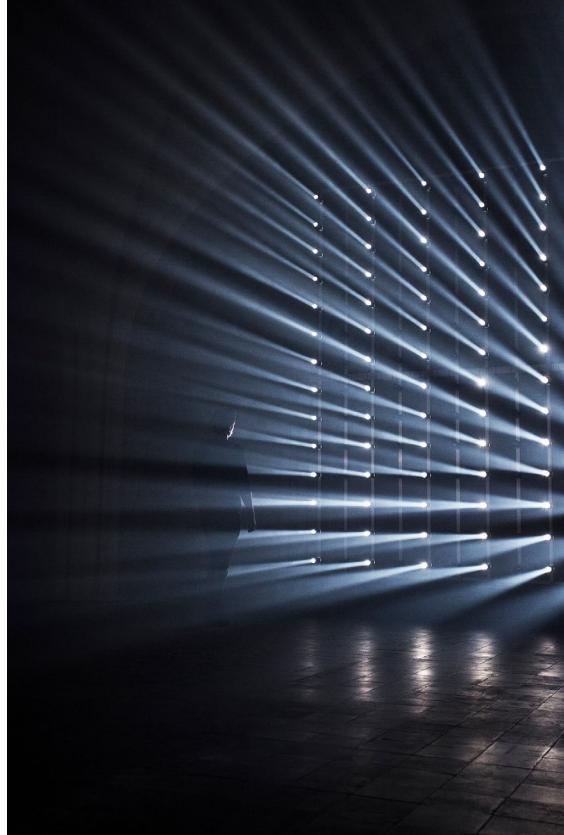
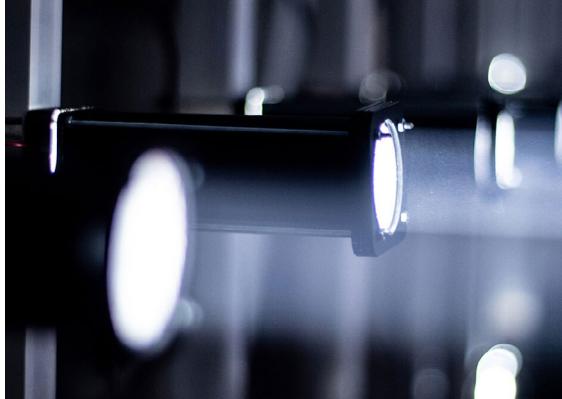
Technologies OpenGL, OpenCV, IR lights and camera

Year 2019

Team Yoke

Link www.yoke.dk/projects/ikea-democratic-design

YOKE Konstruktur



The artwork was realized using a custom designed spotlight consisting of lenses and powerful LED. The control board allows for daisy chaining the lights while being individually controllable.

Konstruktur is a modular artwork that allows for different configurations of lights, where lightbeams become pillars that form structures in space. Four different versions have been on display in exhibition venues around Denmark and Sweden.

Role Tech lead, IxD, hardware engineer

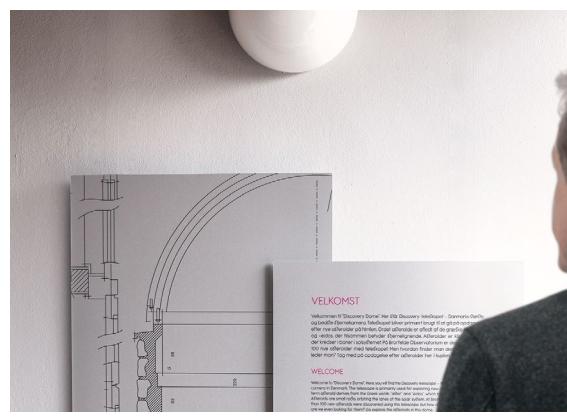
Technologies Custom electronics, lenses, smoke

Year 2017 (Horsens Kunstmuseum), 2018 (Utzon Center), 2019 (Nicolai Kunsthall), 2024 (Uppsala Light)

Team Yoke

Link www.yoke.dk/projects/konstruktur-nicolai-kunsthall

Brorfelde Observatory **The Hunt For Asteroids**



As the observatory was transformed into a discovery center, YOKE designed the lighting, scenography, signage and graphics, as well as the bespoke software and hardware solutions for the exhibition.

The control room has three interactive screens, explaining the discoveries of the telescope. The observatory room was fitted with projection mapping and controllable lighting.

Role Software developer, hardware engineer

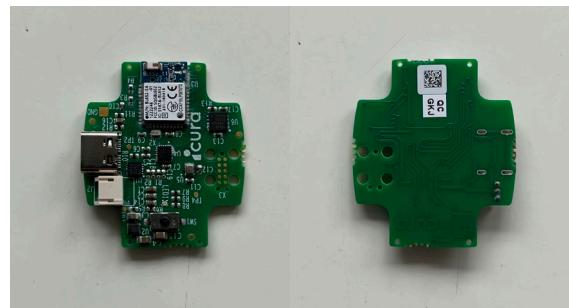
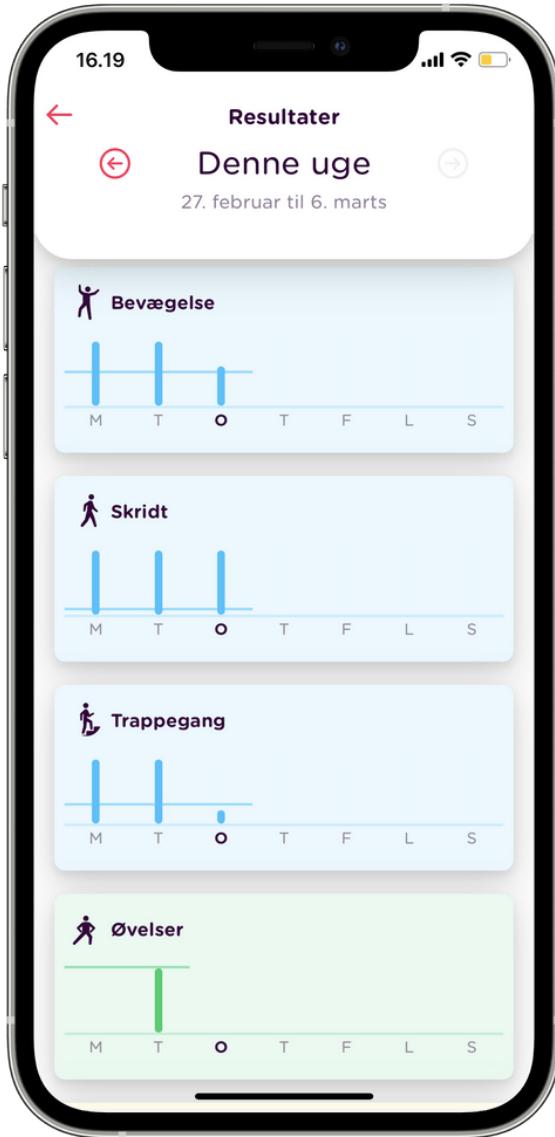
Technologies OpenGL, custom electronics

Year 2019

Team Yoke, AllStage

Link www.yoke.dk/projects/brorfelde-asteroid

Icura Sensor v2



The Icura sensor is a portable motion sensor that analyses the users movements such as steps, stairs, standing and sitting.

The old version was faced with components nearing End-of-Life and needed a new hardware design based on more contemporary technology. The new version features an Arm MCU and BLE connectivity as well as improved battery life.

Role Embedded software and hardware engineer

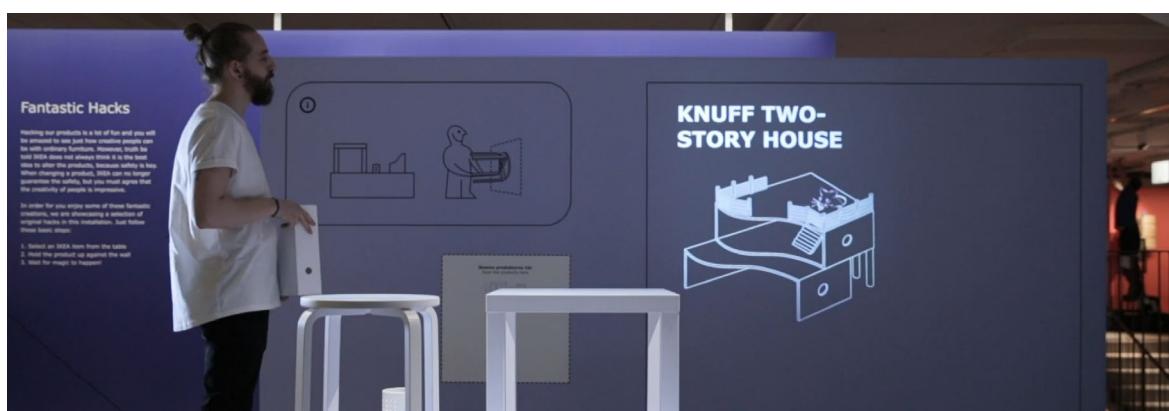
Technologies Nordic nRF52832, IMU, BLE

Year 2019

Team Icura

Link www.icura.dk/saadan

IKEA Museum Hacked



Explore creative and interesting "hacks" made by ordinary people, by interacting with objects and animations.

Yoke has created 4 digital installations for the exhibition, as well as the exhibition's overall graphic design, scenography, and lighting design.

Role Tech lead, software developer

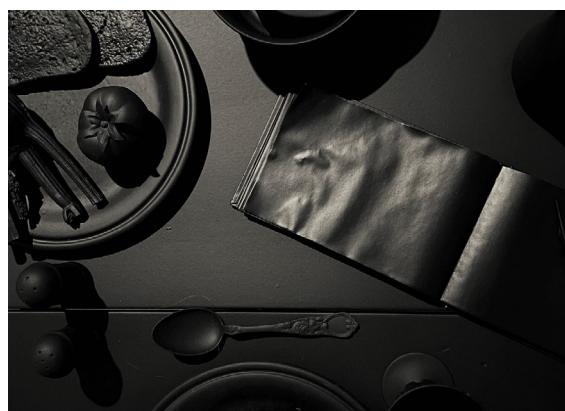
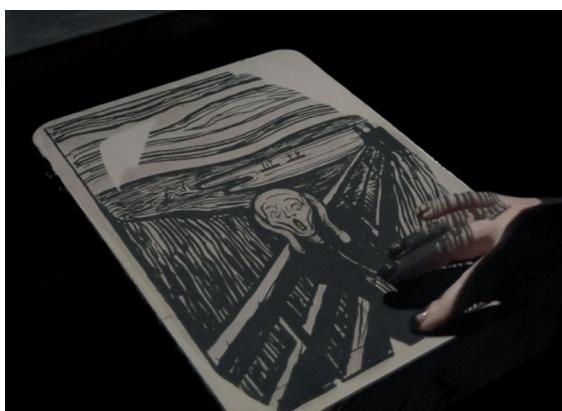
Technologies RFID reader, rotary encoders, OpenGL

Year 2018

Team Yoke

Link www.yoke.dk/projects/ikea-hacked

Munch Museum **Shadows**



Interactive exhibitions using objects, light, sound and moving images to tell stories from Munch's life. Entering the home of Munch, the visitor walks through a sensory multimedia installation.

The exhibition combines the classic physicality of historical objects on display with new and innovative digital installations. The installation "Lithographic Stone" features an interactive experience where visitors can draw on a real lithographic stone with their finger.

Role Senior software developer, tech advisor

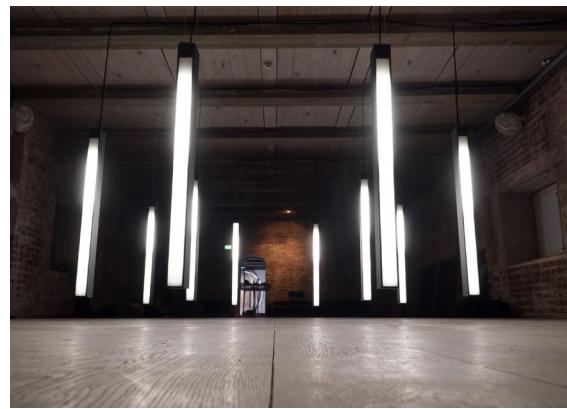
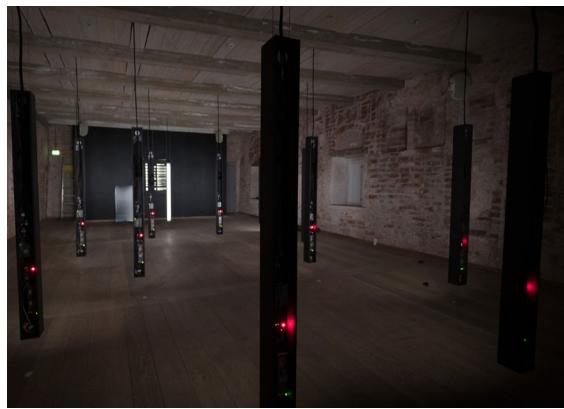
Technologies OpenGL, OpenCV, IR Laser

Year 2018

Team Yoke, Expology, Bright

Link www.yoke.dk/projects/munch-shadows

Esrum Kloster **Abbey Life**



The light installation 'Repetition' - a large sphere of time - welcomes visitors to the modest and simple life behind the abbey walls. The light inside the rims of the sphere is in constant movement, translating a normal 24-hour rhythm into a 24-minute cycle.

Pillars represent a choir of twelve chanting monks led by the abbot. Here, visitors will experience the choir service performed by the monks as part of the eight daily canonical hours.

Role Tech lead, designer, software developer

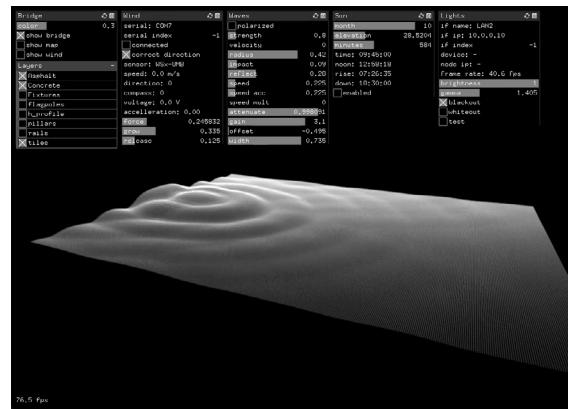
Technologies Addressable LEDs, custom electronics

Year 2018

Team Yoke, Engelbrecht Construction

Link www.yoke.dk/projects/esrum-kloster

Randers The Wave over the Water



Light installation capturing real-time data, including wind direction and speed, through a strategically placed wind sensor next to the bridge crossing Randers Fjord.

The data is then transformed into a unique visual experience, offering spectators an ever-changing display that mirrors the different phases of the day, seamlessly adapting to the dynamic weather and seasonal variations.

Role Tech lead, software developer

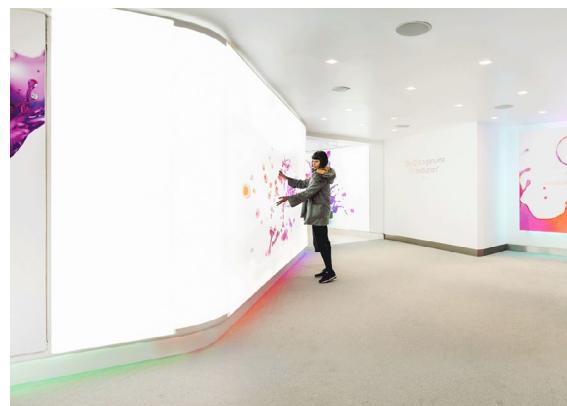
Technologies Wind sensor, DMX

Year 2018

Team Yoke, AllStage

Link www.yoke.dk/projects/bolgen-over-vandet

Sky Q Digital Membrane



Two dynamic installations featured an interactive fluid generated by a custom-built engine, allowing real-time interaction.

A soft fabric worked as a canvas for the tactile experience that invited users to poke, push, and play with the brand as a colorful digital fluid.

The more they moved while making the portrait, the more the fluid moved with them. The result was a series of unique portraits, which could instantly be shared via social media.

Role Tech lead, software developer

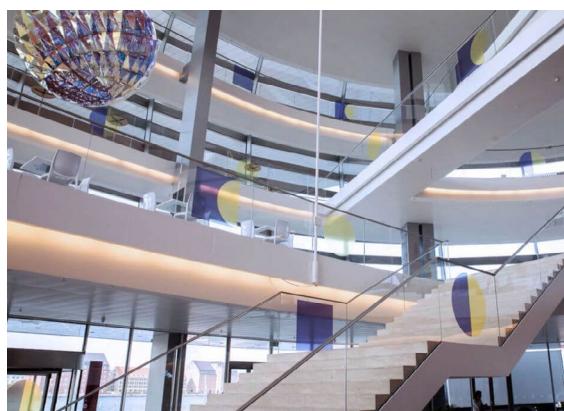
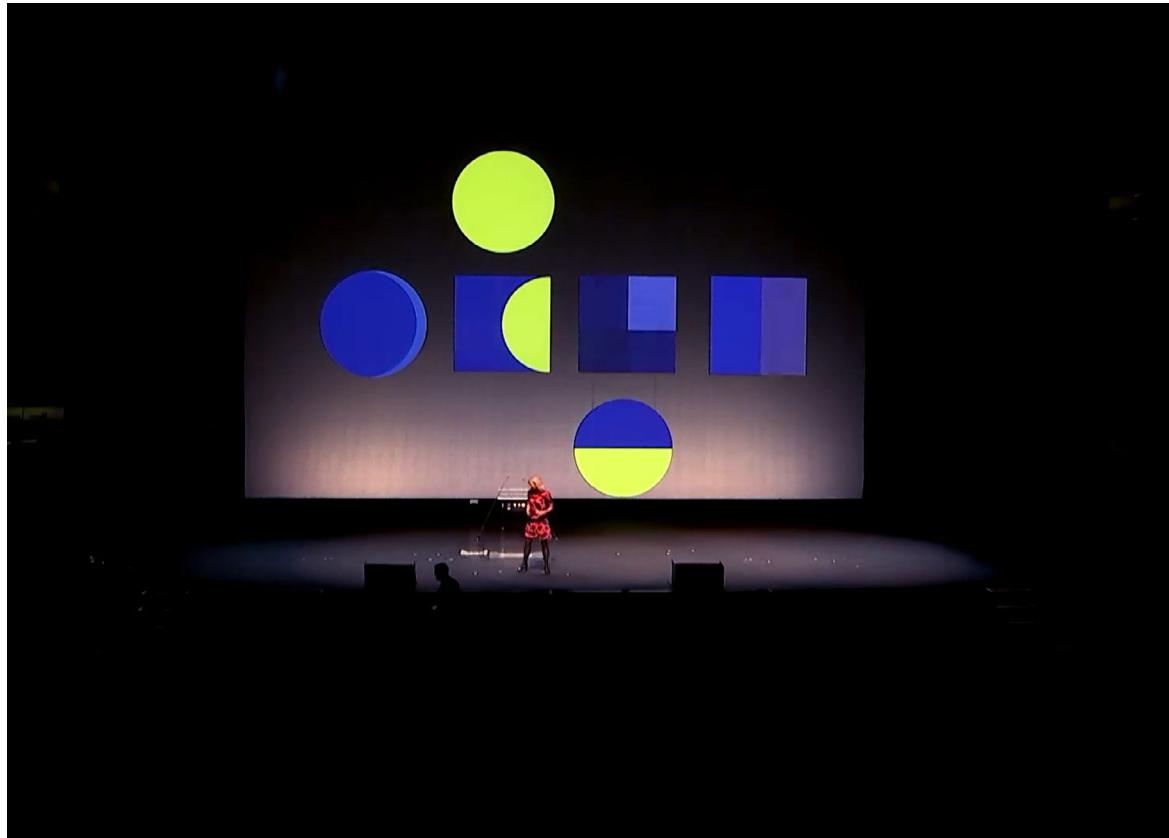
Technologies OpenGL, NVIDIA FlexX + CUDA, Kinect

Year 2016

Team Yoke, Sennep

Link www.yoke.dk/projects/sky

Danish Industry **Summit 2016**



In the foyer a 4 meter wide 360 degree screen greets the summit's participants. Built-in chip in participants' personal access card activates a personal greeting on the screen.

The scenographic backdrop is created by ten 2.5 x 2.5 meter wide moving circles and squares. Each form move up and down individually for a continuous transformation of the scenography - all 3d mapped and choreographed to Den Sorte Skole's beautiful soundtrack.



Role Tech lead, software developer

Technologies OpenGL, UHF RFID Reader

Year 2016

Team Yoke

Link www.yoke.dk/projects/di-topmode-2016

Den Blå Planet FiSK



FiSK explores various aspects of fish consumption, including nutrition, preparation, environmental impact, and health risks, all presented in a fun and playful manner.

With an interactive kitchen, a survey, a film, and a captivating visual identity, the exhibition offers a comprehensive experience.

Role Tech lead, IxD, software developer

Technologies OpenGL, HAP, DisplaX

Year 2016

Team Yoke, Engelbrecht Construction

Link www.yoke.dk/projects/bla-planet-fisk

Saint-Gobain Nordic Showroom



New showroom located in the 8-house by BIG Architects in Copenhagen features a welcoming lobby, a main showroom, and an immersive 3D cinema. Through the creative use of lighting and interactive installations, the showroom offers a visitor experience that seamlessly blends innovation and design with a rich company legacy.

Role Tech lead, software and hardware developer

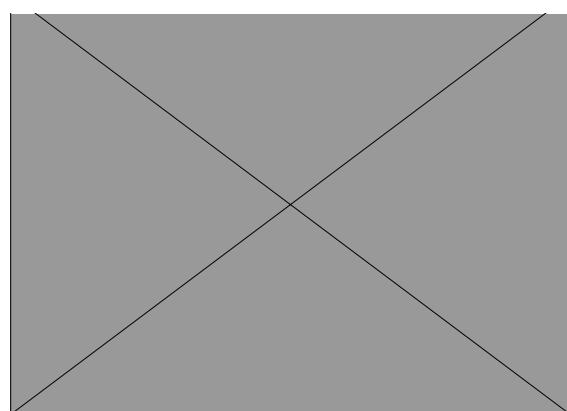
Technologies BrightAuthor, PIR sensors, electronics

Year 2016

Team Yoke, Kurtzweil

Link www.yoke.dk/projects/saint-gobain

Ragnarock Den Røde Løber



RAGNAROCK is a museum of rock, pop and youth culture located in Roskilde. In front of the unique looking building is a entry way named The Red Carpet.

Along the path Yoke has created a number of sound installations that lets the audience listen to stories about music history, try out sound effects, and make their own drum beats using a very special drum machine.

Role Tech lead, software and hardware developer

Technologies Custom electronics

Year 2016

Team Yoke, Gadget Group, Logik & Co

The Royal Library Skanse III



Created by Copenhagen-based artist and researcher Tobias Ebsen,

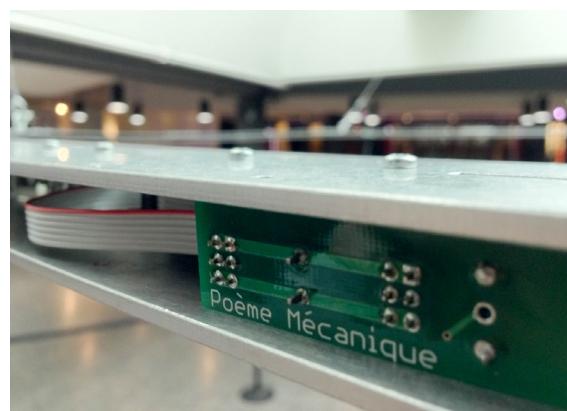
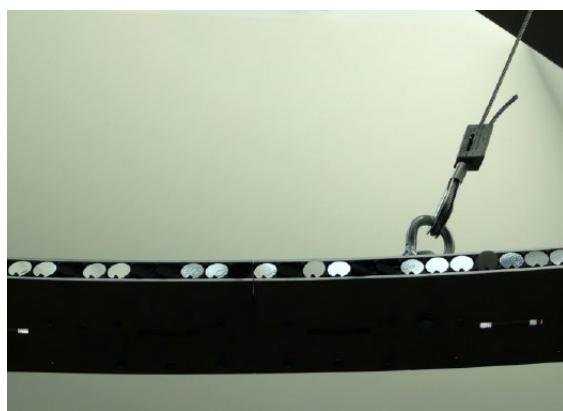
Role Artist, graphics designer

Technologies Photoshop, After Effects, Blender

Year 2014

Link vimeo.com/104114468

Tobias Ebsen **Poème Mécanique**



Created by Copenhagen-based artist and researcher Tobias Ebsen, **Poème Mécanique** is an electromechanical sound sculpture in Espace culturel Georges-Émile-Lapalme, a public walkway connecting the Place-des-Arts metro and Complexe Desjardins in Montréal. Utilizing a continuous ring of 840 flip-dot mirror disks and defining a 4.2 metre circular space the piece offers a subtle sonic counterpoint to the din of a (generally) bustling public thoroughfare.

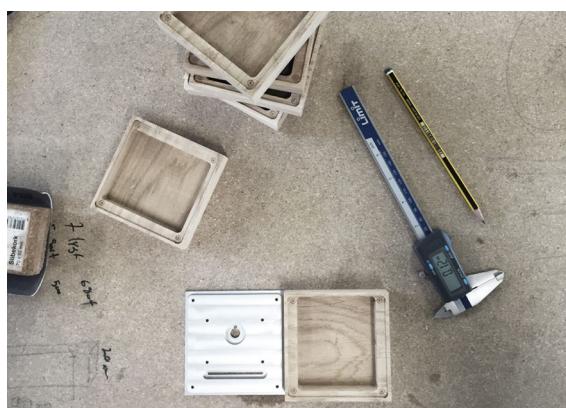
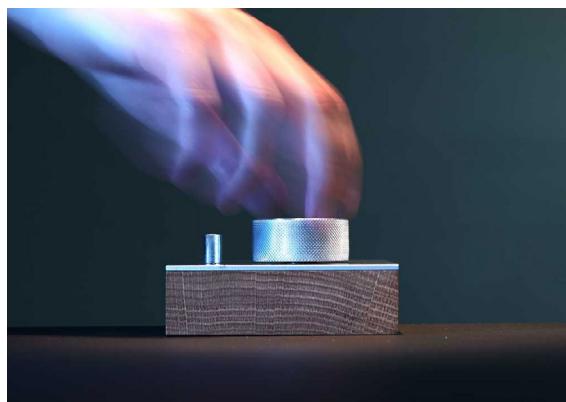
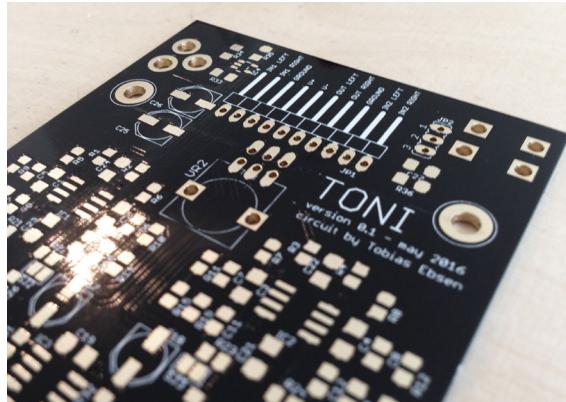
Role Artist, software and hardware developer

Technologies Flip-dots, custom electronics

Year 2015

Link www.creativeapplications.net/sound/poeme-mecanique-a-subtle-and-cascading-sound-sculpture-encircles-montreal/

TONI Wireless Turntable Preamp



The TONI connects your turn table with your wireless speaker via Bluetooth. It has a built-in Riaa preamplifier and an additional line input so you can cross-fade between the two.

The design is simple, elegant and matches your favorite turn table from that golden aera.

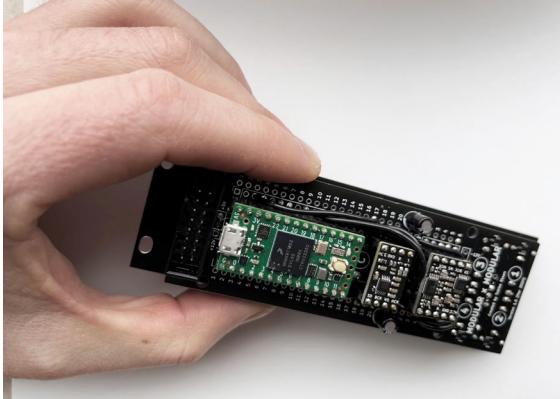
Role Hardware and software engineer

Technologies Custom electronics, BLE, AptX

Year 2016

Team Tobias Ebsen, Niels Kristian Bitch, Michael Ubbe-
sen

MxM Gen Tape Delay

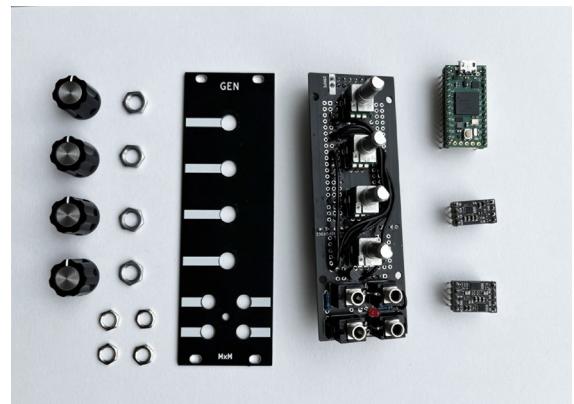
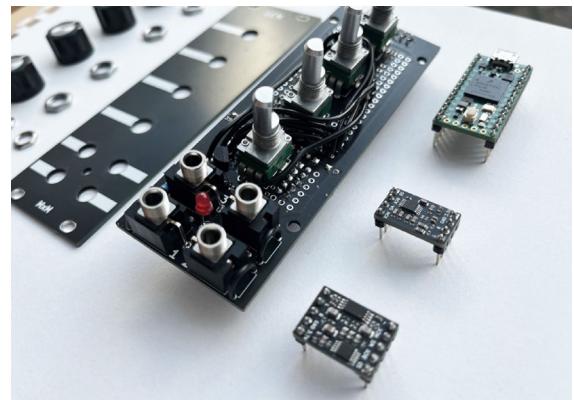


```
uint32_t cm, prev[4];  
  
void setup() {  
    AudioInInterrupts();  
    AudioMemory(10);  
  
    tapeDelay1.begIn(tape_delay_bank, DELAY_MAX_LEN, 5000, 0, 10); //bank to use, size of bank, delay time in samples  
  
    mixer1.gain(0, .5); //wet level  
    mixer1.gain(1, .5); //feedback level  
  
    filter1.frequency(10000.0);  
  
    mixer2.gain(0, .5); //wet level  
    mixer2.gain(1, .5); //dry level  
  
    AudioInInterrupts();  
    analogReadAveraging(41);  
}  
  
void loop() {  
    cm = millis();  
  
    if (cm - prev[1] > 5) { //to reduce noise it's best not to do this too rapidly and to smooth the pot reading.  
        prev[1] = cm;  
        float feedback = pot_feedback.readSmooth();  
        mixer1.gain(0, 1.0 - feedback * 0.5f);  
        mixer1.gain(1, feedback);  
        filter1.frequency(pot_lowpass.readSmooth());  
        mixer2.gain(0, pot_wet.readSmooth());  
        tapeDelay1.length(pot_time.readSmooth());  
    }  
}
```



Gen is a generic circuit board and front panel that allows for many different synthesizer modules to be created.

Having 4 potentiometers, 4 jack-sockets, 1 LED, it provides inputs and connectivity that works for a lot of basic modules. The circuit board has eurorack power headers, and prototyping holes for DIP(W) devices such as Arduino Nano or Teensy, and DIP8 holes for an op-amp such as TL072.



Role Hardware and software designer

Technologies Custom electronics

Year 2024-

Team Tobias Ebsen

Synth Modular



Modular synthesizer. Analog and digital modules:

- VCO - CEM3340 based oscillator
- Mixer
- Envelope Generator - Arduino Nano based
- Filter - V2160 based low-pass filter
- VCA
- Digital Tape Delay - Teensy based
- Digital Reverb - Teensy based Freeverb
- etc.

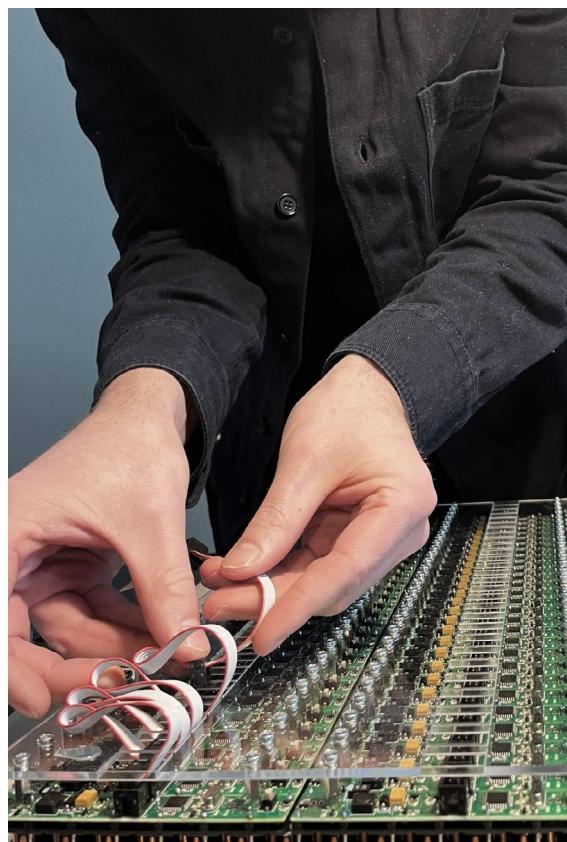
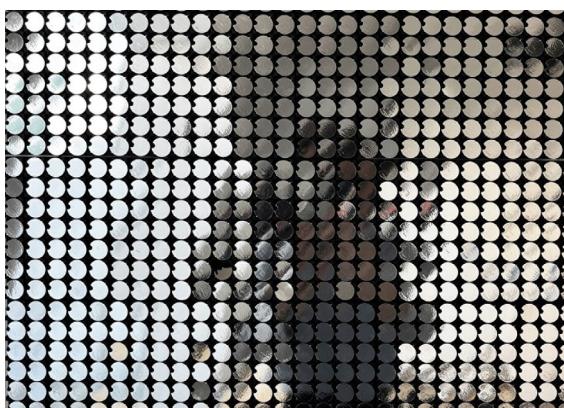
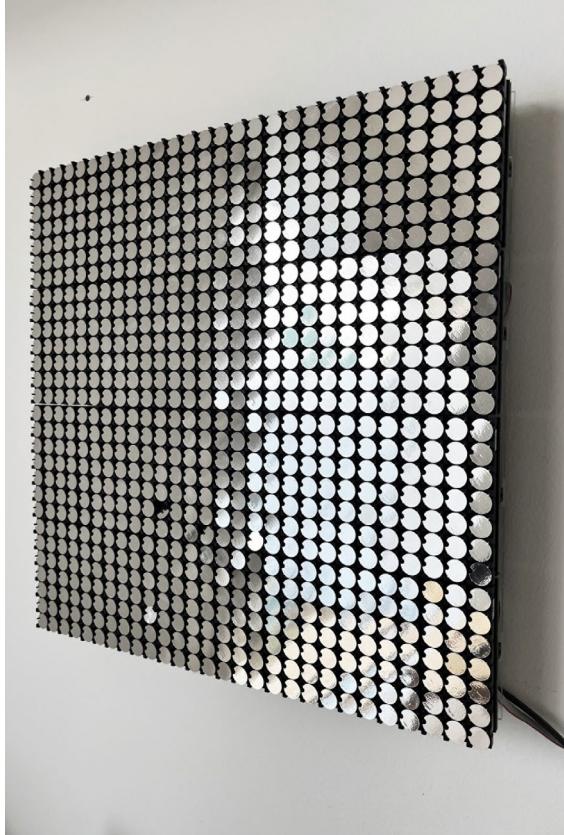
Role Hardware and software designer

Technologies Custom electronics

Year 2024-

Team Tobias Ebsen

FlipDot 28x28 Mirror



784 disks with mirror and black sides. When light is reflected it breaks the reflection into pixel-like fragments.

Using magnetic coils the disk will change between the reflective and non-reflective side.

Role Designer

Technologies Flip-dots, custom electronics

Year 2023

Team Tobias Ebsen