Projects by Victor Lindholm

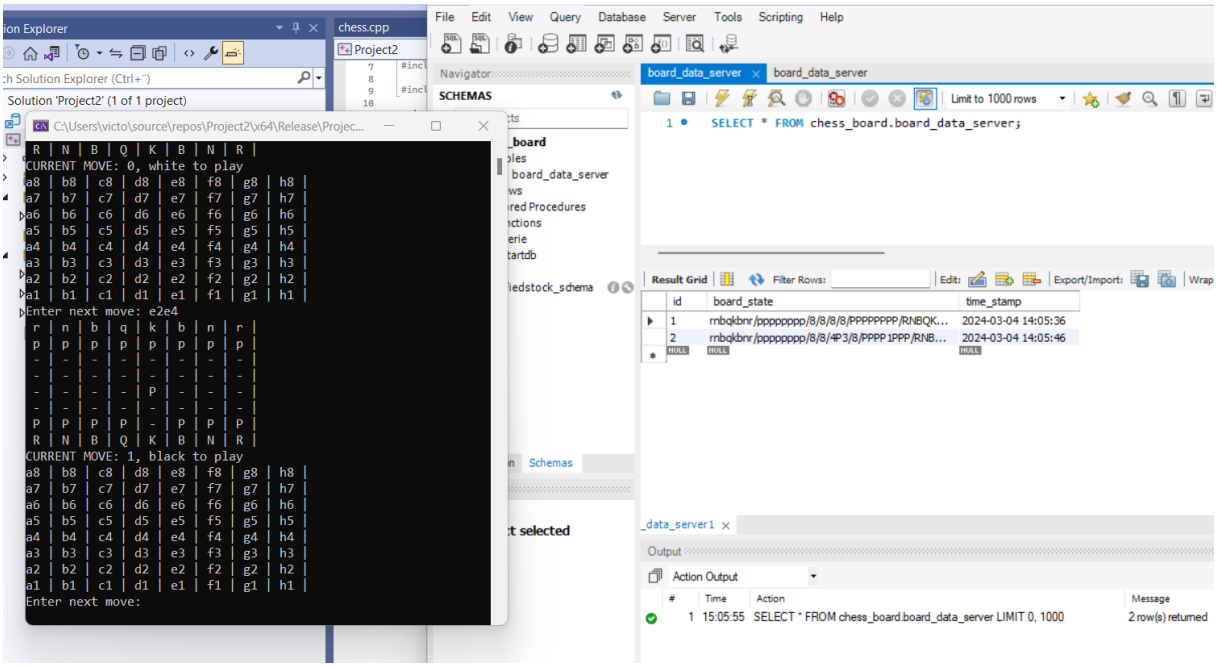
These are just a few of the projects that I have been involved in or created myself. In the projects listed, I have taken responsibility for programming, and in many cases, written everything myself.

Some of the projects have source code on GitHub, but not all. Link to my GitHub: lithium-lamp (github.com)

This document was last updated on 04-03-2024

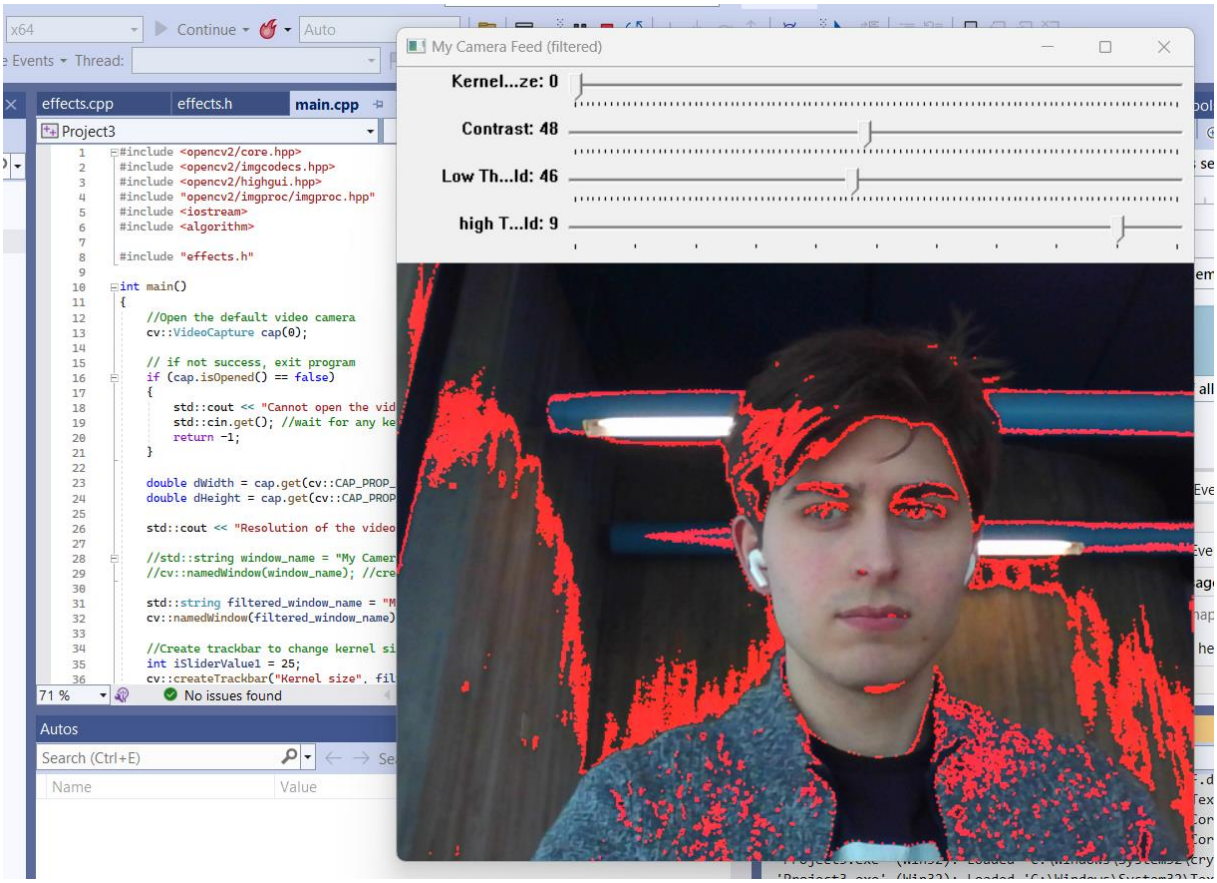
Personal projects

Chess with database functionality



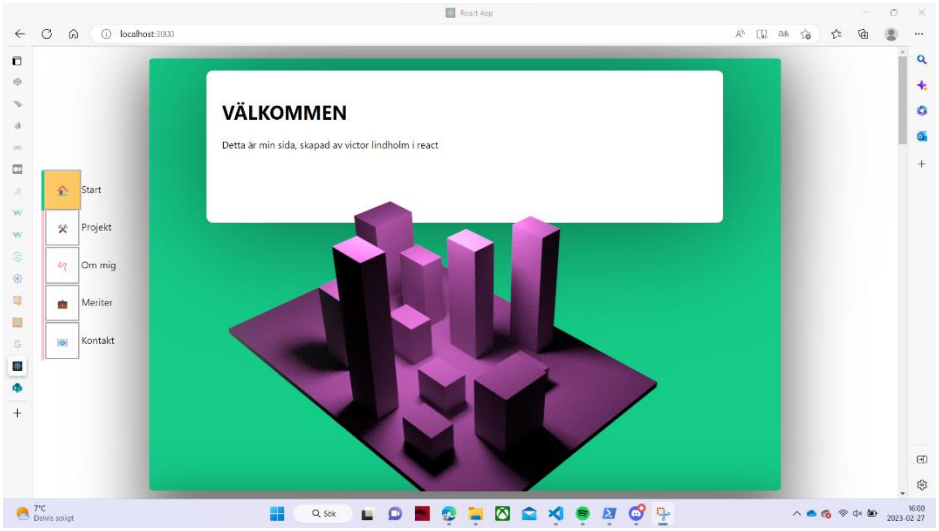
A chess game written in C++ that communicates with and stores data about board positions via a MySQL database. Since I couldn't find a simple solution to link my database with C++ in Visual Studio, I used a library called mysqlconnector.

Real- time image processing

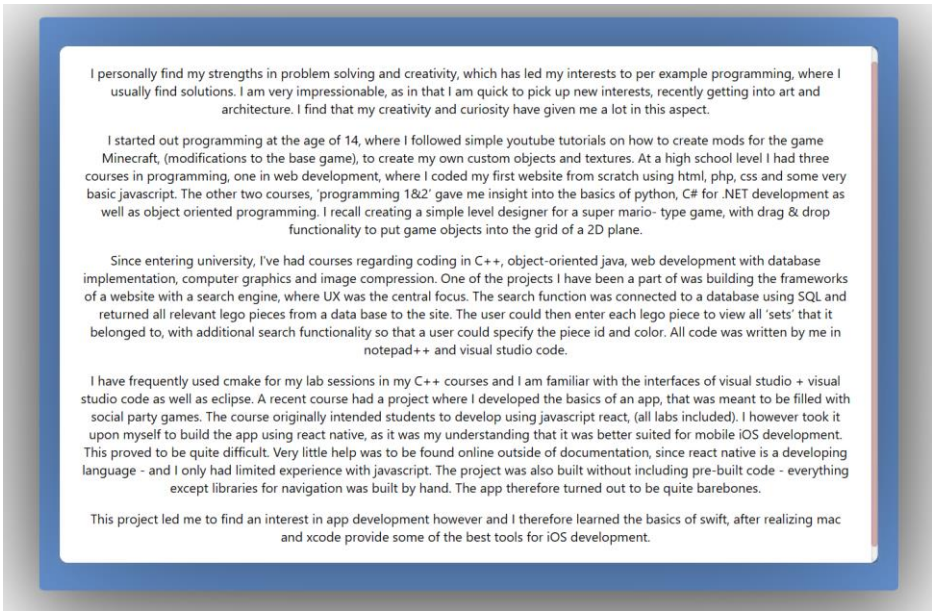


Based on the knowledge I acquired during one of my courses in image processing, I attempted to create a simple image filtering project. The project demonstrates in real-time how the video stream from a camera is affected when different filters are applied. The project is intended to be further developed for facial recognition. Written in C++ and using the OpenCV library.

Portfolio website via react



A simple website intended to serve as a kind of portfolio for me and some of my projects. The site was never put into use, but the design is something that I am personally very satisfied with. Going forward, I plan to transfer the projects covered by this document to a similar website.



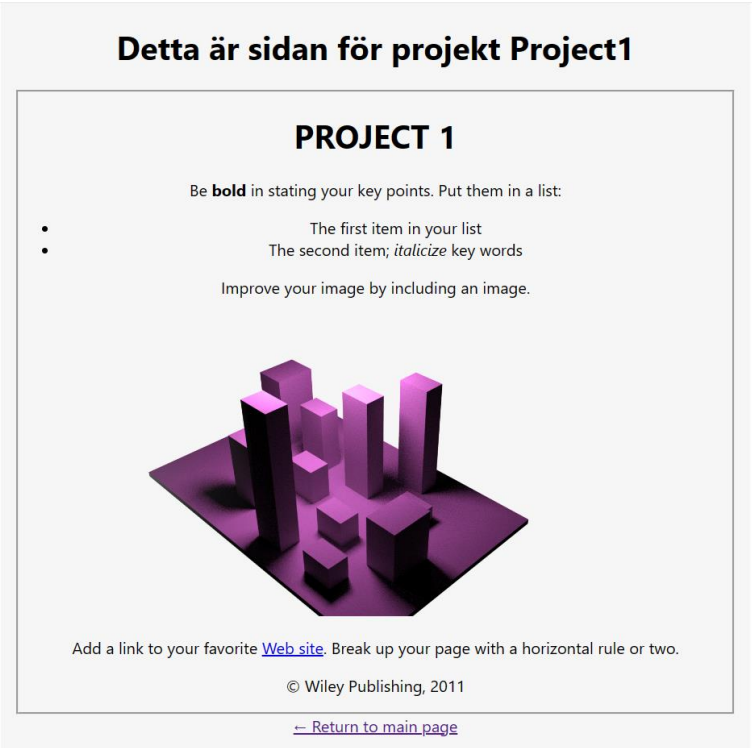
I personally find my strengths in problem solving and creativity, which has led my interests to per example programming, where I usually find solutions. I am very impressionable, as in that I am quick to pick up new interests, recently getting into art and architecture. I find that my creativity and curiosity have given me a lot in this aspect.

I started out programming at the age of 14, where I followed simple youtube tutorials on how to create mods for the game Minecraft, (modifications to the base game), to create my own custom objects and textures. At a high school level I had three courses in programming, one in web development, where I coded my first website from scratch using html, php, css and some very basic javascript. The other two courses, 'programming 1&2' gave me insight into the basics of python, C# for .NET development as well as object oriented programming. I recall creating a simple level designer for a super mario- type game, with drag & drop functionality to put game objects into the grid of a 2D plane.

Since entering university, I've had courses regarding coding in C++, object-oriented java, web development with database implementation, computer graphics and image compression. One of the projects I have been a part of was building the frameworks of a website with a search engine, where UX was the central focus. The search function was connected to a database using SQL and returned all relevant lego pieces from a data base to the site. The user could then enter each lego piece to view all 'sets' that it belonged to, with additional search functionality so that a user could specify the piece id and color. All code was written by me in notepad++ and visual studio code.

I have frequently used cmake for my lab sessions in my C++ courses and I am familiar with the interfaces of visual studio + visual studio code as well as eclipse. A recent course had a project where I developed the basics of an app, that was meant to be filled with social party games. The course originally intended students to develop using javascript react, (all labs included). I however took it upon myself to build the app using react native, as it was my understanding that it was better suited for mobile iOS development. This proved to be quite difficult. Very little help was to be found online outside of documentation, since react native is a developing language - and I only had limited experience with javascript. The project was also built without including pre-built code - everything except libraries for navigation was built by hand. The app therefore turned out to be quite barebones.

This project led me to find an interest in app development however and I therefore learned the basics of swift, after realizing mac and xcode provide some of the best tools for iOS development.



Detta är sidan för projekt Project1

PROJECT 1

Be **bold** in stating your key points. Put them in a list:

- The first item in your list
- The second item; *italicize* key words

Improve your image by including an image.

Add a link to your favorite Web site. Break up your page with a horizontal rule or two.

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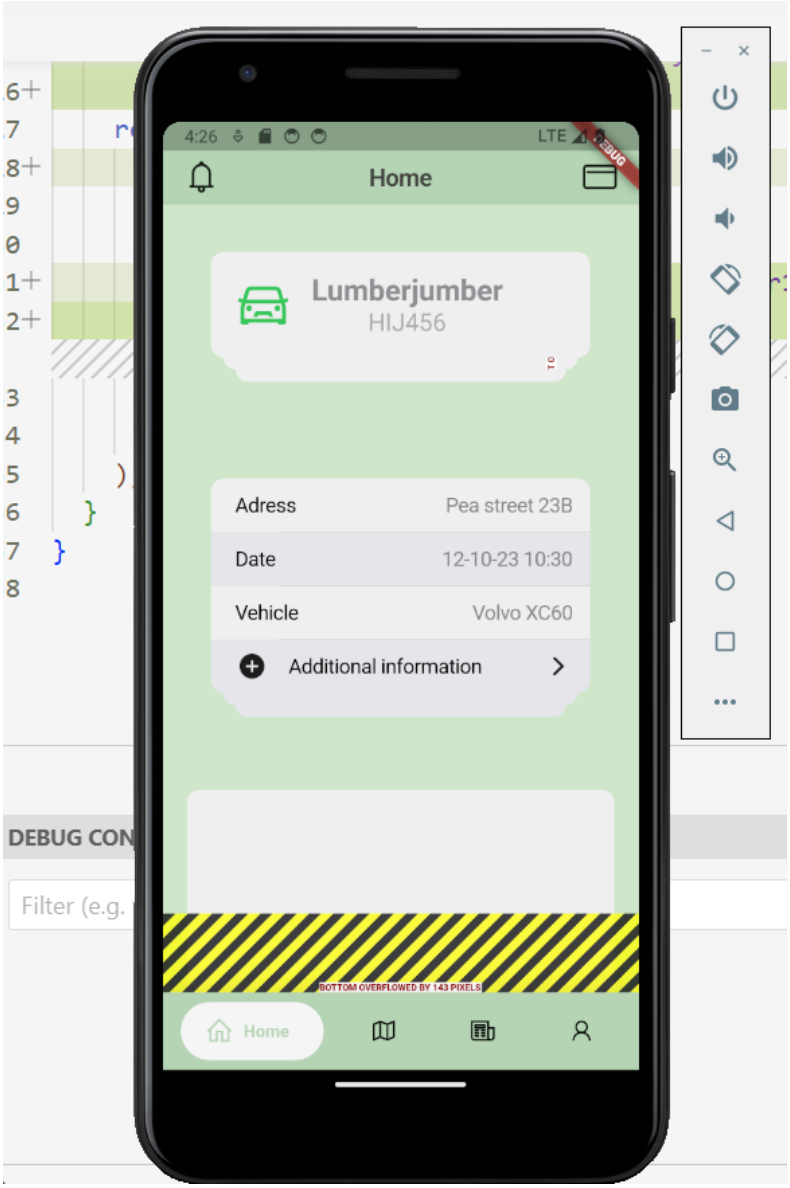
← Return to main page

React flutter app

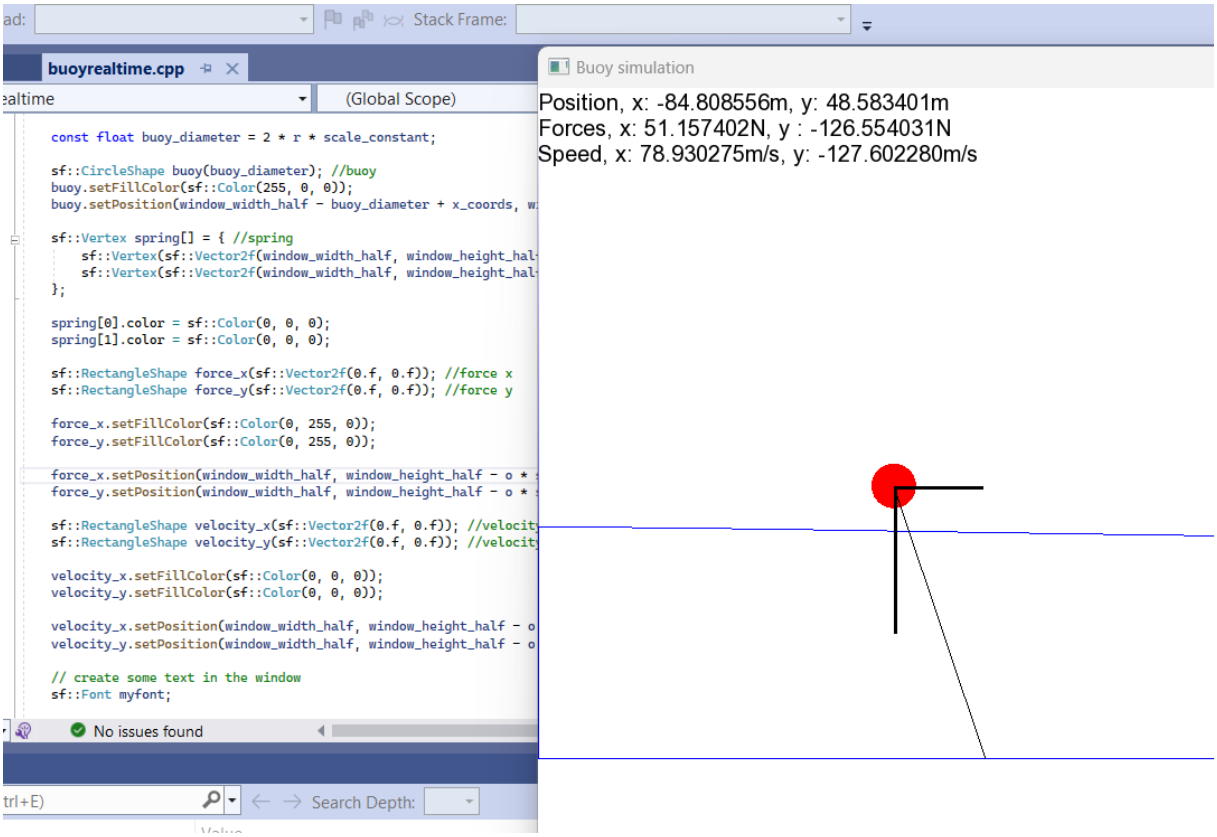


A parking app built with the Flutter framework. The project initially had access to Firebase and thus also Google Maps, the relics of which are visible at the bottom of the screen. The app is my first project in Flutter and my second project related to app development for phones.

Study-related Projects (where I have been responsible for the code)

Buoy in water

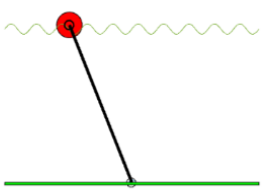
A buoy floating in water is simulated via the Euler method in real-time and rendered via the SFML library. The buoy's position can be adjusted by clicking in the window. NOTE: the values in the program are not to scale.



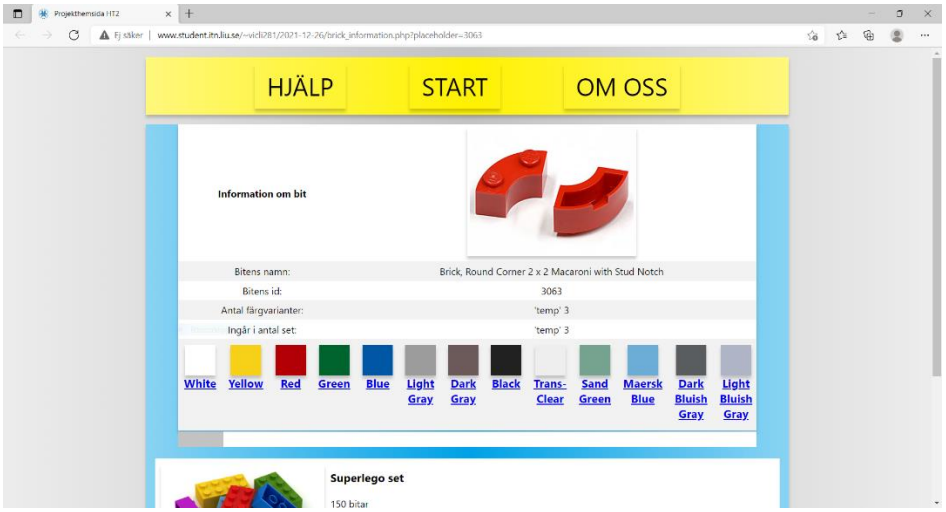
Simulation in MATLAB:

Not in real-time, a vector of positions is rendered by a homemade animation function and saved as a video file.

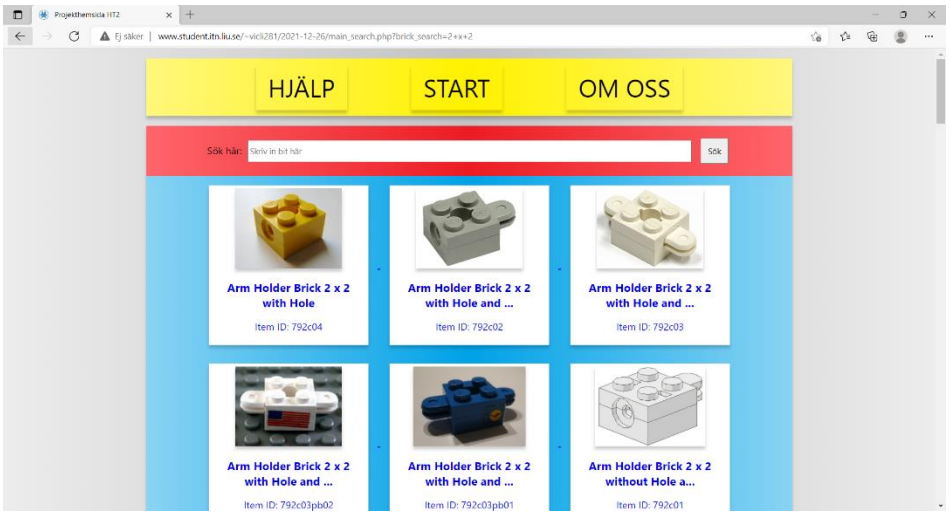
```
h = 1/60;

N = 60 * 60; %count of instances observed, total time: N * h seconds.

m = 2; k = 0.8; r = 0.5; rho = 10; g = 9.82; %consts
consts = [m, k, r, rho, g];

phi = 360; %wave frequency => wave speed
A = 2/10; %amplitude
wavefunc = @(x,t)A * sind(phi * (x + h*t)) + 3;

p0 = 1; theta0 = 0; dL0 = 2; v0 = [0 0]; %variables
originalvals = [p0, theta0, dL0, v0]; %

buoypos = real(recursive(consts, wavefunc, originalvals, h, N)'); %(2 dim
```

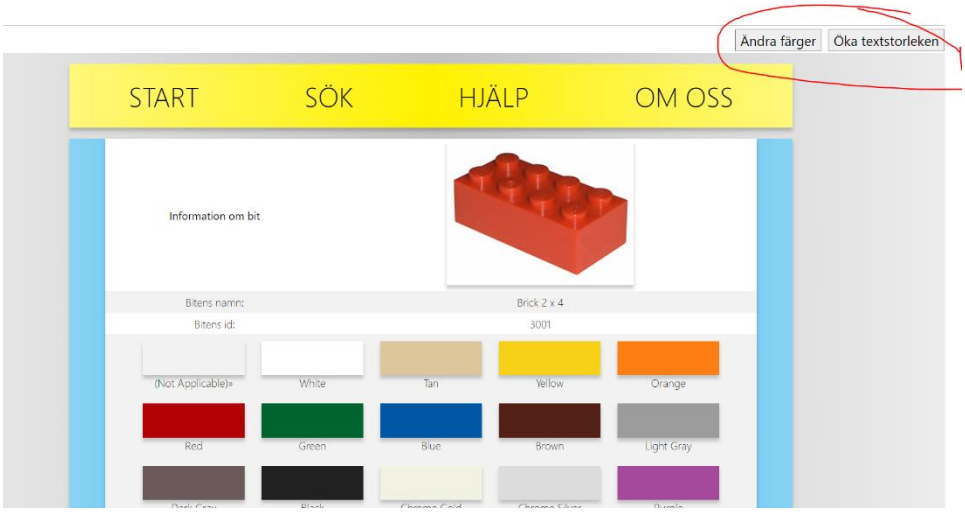


Lego database

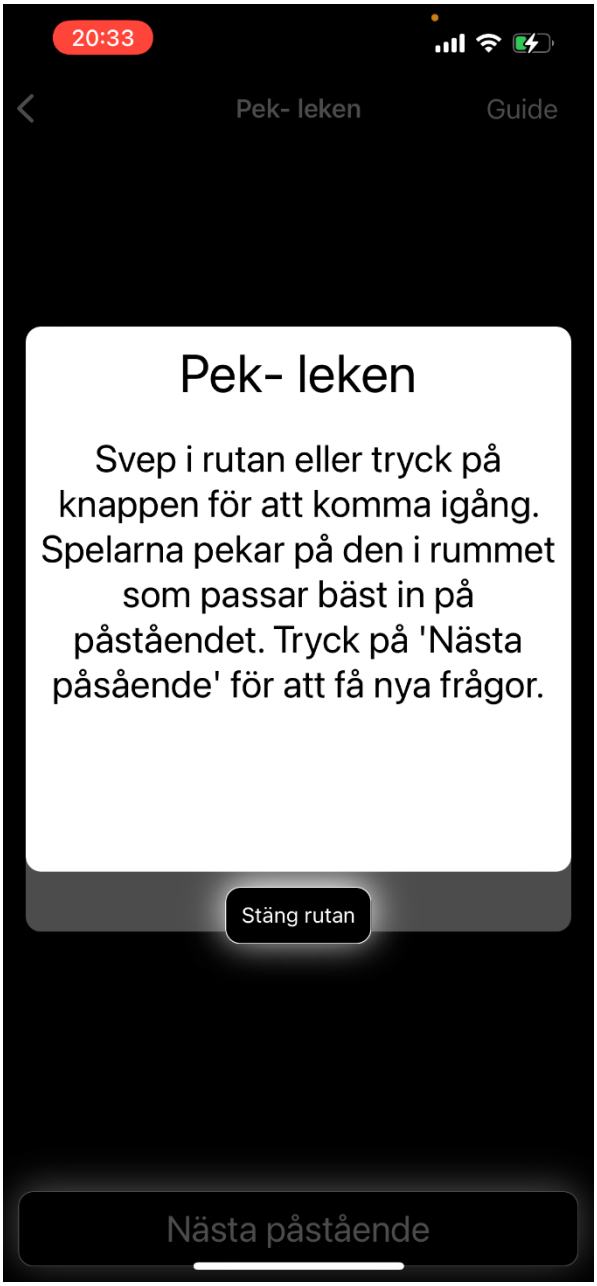


A site which has a database consisting of lego pieces linked via PHP + SQL. The project uses a search filter query, which is one of the central functions on the website. The first two images are early versions of the website, while the third and final one represents a more finished design.





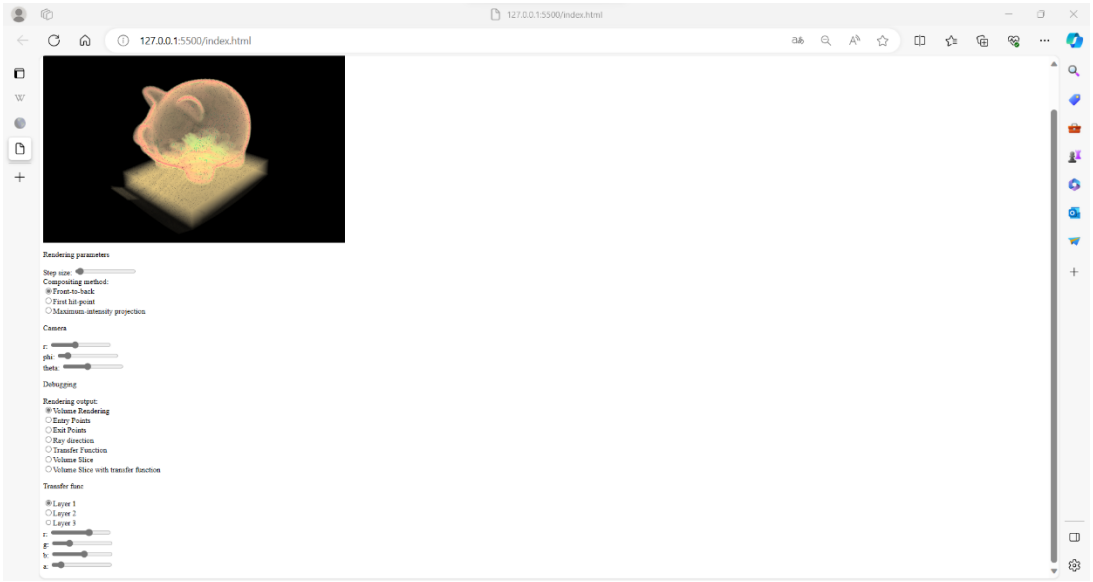
Party games in react native



The first project I've done in React Native, as well as the first mobile app I've built. A simple app for games in group settings.

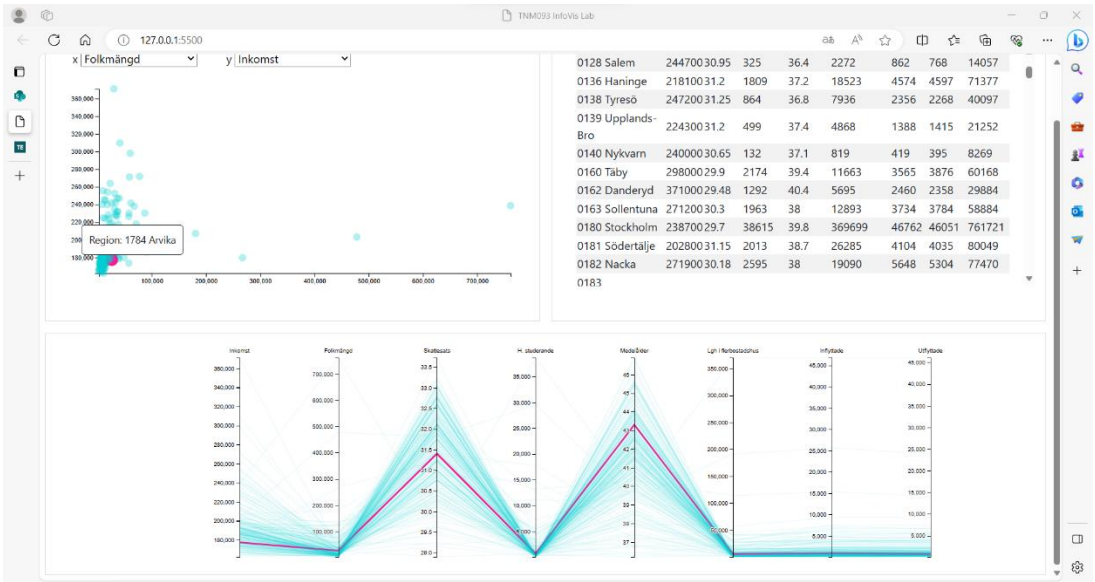
Lab related projects

Visualization of Piggy Bank via Volume Rendering



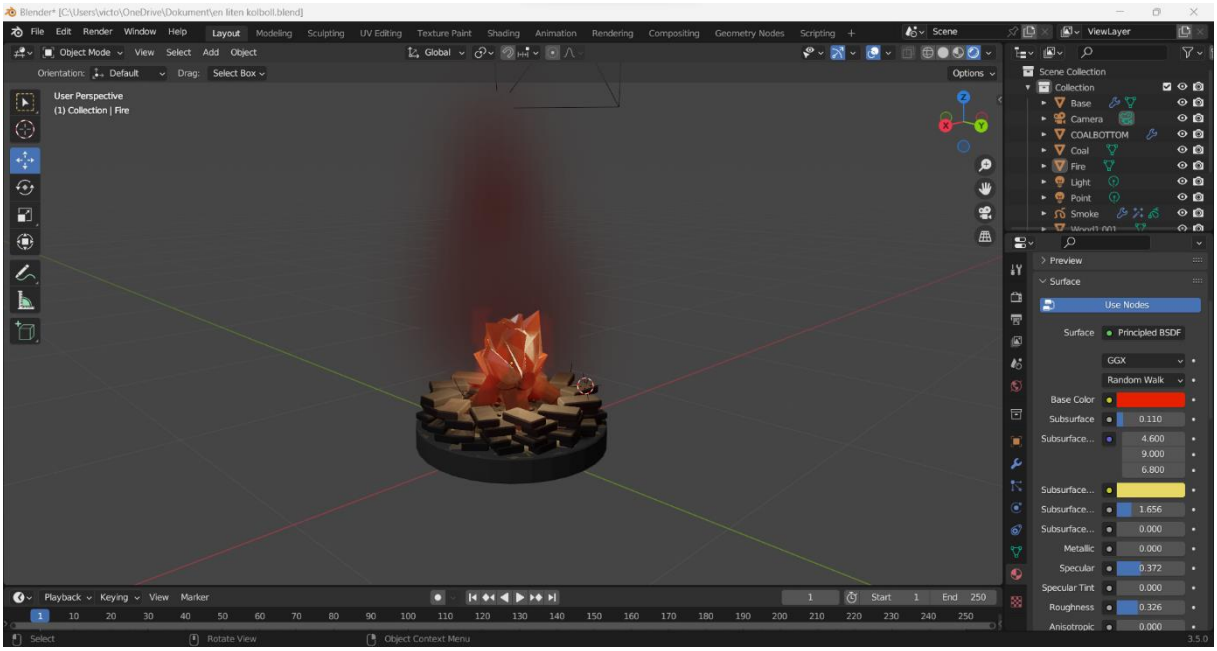
Implementation of volume rendering, a visualization method to represent density in different materials. The logic was implemented in a JavaScript file with C++ functionality via an OpenGL (WebGL) script.

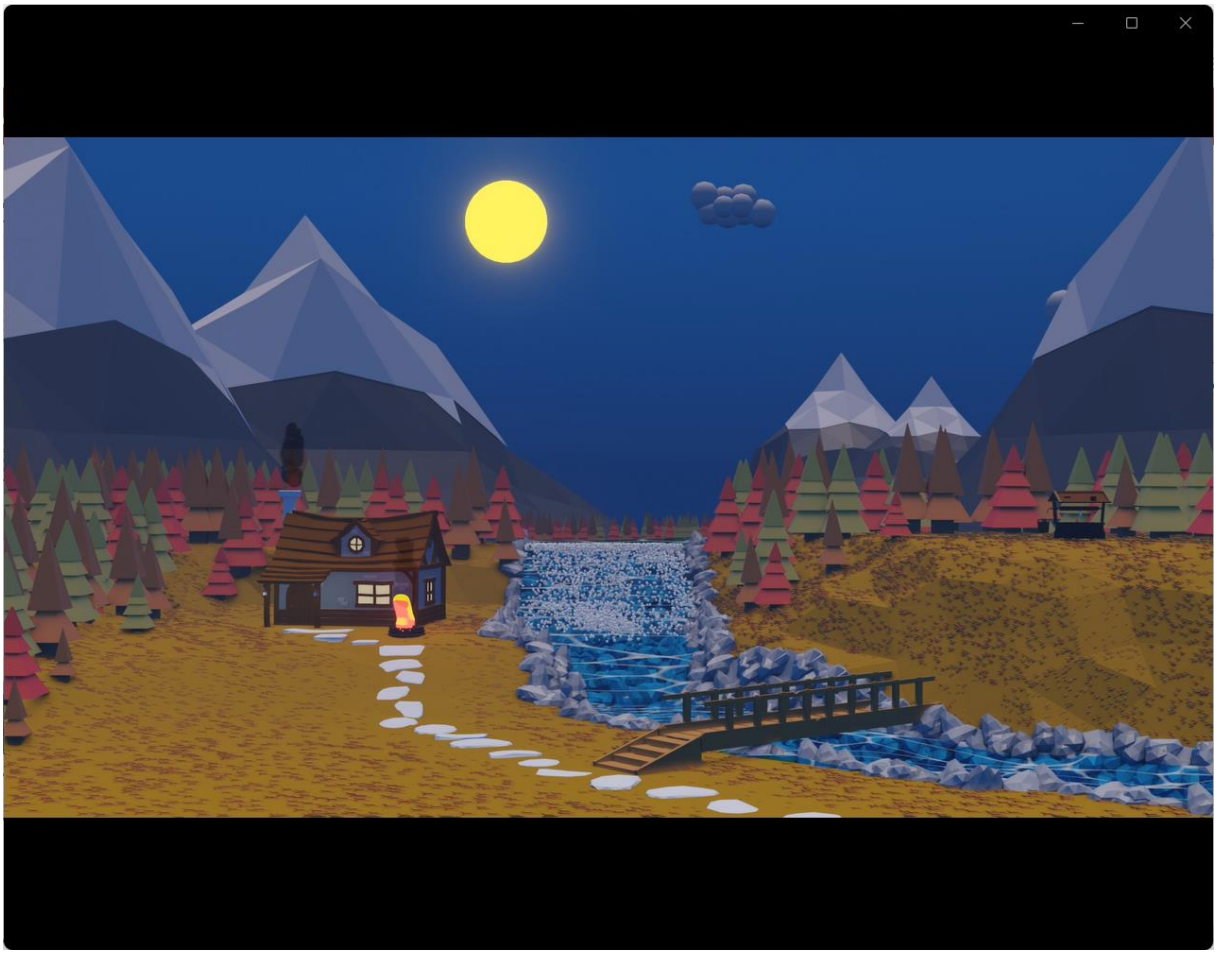
Visualization of Data via Graph Techniques



Different representation methods were implemented via the D3 library in React JavaScript. Scatterplot, parallel coordinate graph, and data table. Objects in the table, lines in the parallel graph, or points in the scatterplot could be selected to be highlighted in the other respective visualizations.

Other Projects (non-code related)





Planned projects:

Twitter bot

A simpler bot intended to automatically publish events, such as when I solve a problem via LeetCode, or alternatively, publish my most listened-to song of the month. For this, I plan to work with Postman initially and then start scripting in Python. However, I have already encountered issues with the now x API not seeming very friendly to free users.

Further Development!

Improve the existing portfolio website via React and include TypeScript.

Something I would like to try is developing an iOS app via Swift since I learned the language a year ago. Unfortunately, developing Swift via Xcode requires a Mac and access to the resources Apple has, so that project is on hold for a while.