Jonatan Ebenholm

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Education: Master of Science in Media Technology and Enginering
Languages: Swedish *Native*, English *Advanced*.

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github.com/Sahriz
portfolio-jonatan-ebenholm.vercel.app

Projects

2025 **Terrain Library**
A C++ library to generate lots of differnet terrain
Creating terrain for games or visualisation is something of a passion of mine. However, I do not like rewriting similar algorithms everytime I create a project. Therefore, I made a library in C++ that is open to the public, but is meant for personal use. It has CPU implementations of some algorithms, but the main selling point is the OpenGL compute shader implementations which creates terrain lightning fast in comparison. Currently, the terrain algorithms implemented is a heightmap offset on a plane, marching cubes with 3D gradient noise, and a voxel cube imlementation which mimics that of the popular game Minecraft. Much more is found in my portfolio.

2025 **Pathtracer**
Pathtracer written in C++ on the GPU
For the course *Computer Graphics* me and another student wrote a pathtracer from scratch on the GPU using C++ and OpenGL, in which we implemented objects such as spheres and triangles, transmissive, reflective, and Lambertian surfaces, as well as the pathtracing algorithm. The program produces real-time results and works great even with models using tens of thousands of triangles. The project was given the highest remarks possible for the course and can be found on my portfolio (with our paper) and on my Github.

2024 **Elemental Clash**
Touchscreen cardgame using computer vision
During my Bachelors project I worked with six other students to learn to create a unique system from the ground up. The main focus was to learn and understand the practical aspects of working with others in line with the scrum model. The project was developed using Unity and C#, utilizing computer vision to reach the project goals. The final product is playable with hardware specific to Norrköping Visualiseringscenter's (being the customer) request, so sadly no demo is available. More details can be found in my portfolio, as well as the bachelors thesis.

2024 **Interactive Solar System Simulation**
Modeling Project
A project under the course *TNM085 - Modelling Project* in which an interactive solar simulation was created using Blender-python and Euler's approximation. The program keyframes animation automatically and adds a custom Blender UI for the useer to use. It assists users in designing and visualizing their own planetary systems while simulating realistic orbits.

Technical Skills

Prog. Languages	Python, C++, C#, Matlab, glsl and hlsl.
Machine Learning	Natural Language Processing, Sentiment analysis, Supervised/Unsupervised Learning, Neural Networks and Scikit-learn.
Data Structures	Graph algorithms, complexity analysis, tree traversal, sorting and searching techniques.
Signal Processing	Fourier analysis and transform theory.
Control Systems	Automatic control and simulations (e.g. MATLAB/Simulink).
Game Engines	Unity 2D/3D and Godot.
3D Graphics	Blender, Unity and OpenGL.

Experience

Spring Semester 2024
Lab-assistant for the course *Transform Theory*
Linköping University
I helped students understand parts of the course material, including Fourier-series, Fourier transformation, Laplace transformation, and Z-transformations. The labs were using Matlab as a programming language and visualization tool.

Fall 2024 - Summer 2025
Illustrator for LiTHanian
LinTek
As an Illustrator for the student paper LiTHanian, I was involved in the planning and illustration phases ahead of every quartely issuance of the physically printet paper. The intention was to work together with my team to create an interesting and engaging paper for all student to read.

Fall 2025 - Summer 2026 (ongoing)
Programming assistant for LiTHehack
Linköping University
As a programming assistant I will be helping students with any code related issues that they might have, as well as theory that they might need help to brush up on. I did not apply for the position but was instead nominated by other students.

Degrees

2021–2026 (Ongoing)
Master of Science in Media Technology and Enginering
Linköping University
Specializing in Machine Learning, Video Game Programming and Computer Graphics.

2017–2021
Naturvetenskapsprogrammet
Rudbeckianska Gymnasiet