Amber Elferink

amberelferink.com | AmberElferink | Utrecht (The Netherlands)
Amber-Elferink | +316 8200 4212 | amber.elferink@gmail.com

Robotics and Game master student with interest in Haptics.

Haptic feedback and natural locomotion in virtual reality will provide lasting experiences. Developing technology in that field is my dream. For a more visual explanation (same and more images, videos and information) go to: www.amberelferink.com

Education

Double Master: Robotics & Game and Media Technology

View courses and material covered *here*

Master Robotics TU Delft Delft University of Technology

Sept 2020 – July 2022 (expected)
Current grade (8.2 / 10)

Utrecht University Game and Media technology Master

Sept 2019 – July 2022 (expected)
Current GPA 4.0/4.0 (8.46 / 10)

Computer Science Minor

Sept 2017 – Dec 2018
GPA 4.0/4.0 (8.04 / 10)

Chemistry Bachelor

Sept 2014 – June 2017

Skills

Languages

- ✓ C#, C++ (OpenGL, OpenCV, Arduino)
- ✓ Unity
- ✓ Python (Tensorflow, OpenCV)
- ✓ Javascript/NodeJS, SQLite, HTML (+ pug)/CSS
- ✓ Dutch (native), English (C1-C2)

Others

- ✓ Adobe Photoshop
- ✓ Adobe Illustrator (Basic skills)
- ✓ Arduino

Work experience

Software Developer
Fair2Media - View videos about the project
May 2019 – August 2019
Filling the time between bachelor and master, I worked on the Ditou table at Fair2Media. Fair2Media is a small company with total of 5 people (excluding me). The Ditou table is an interactive table where a beamer projects a map of real places via Unity. On this map, you can use round disks as a cursor to place objects such as windmills and solar panels. The round disks are tracked by a camera above the table. My responsibility was to develop a new tracking algorithm for round disks on the Ditou table (C++ and OpenCV), and to make an environment in Unity loading, customizing and saving the map. Thereby, by using the tracked positions, 3D windmills and solar panels could be built on the map. Therefore, this is basically the entire software that is controlling the table. The tracking and Unity environment communicated via NodeJS. The table is currently used to demonstrate the outcomes for building windmills and solar panels for citizens' initiatives.
Watch a video about it **here.**

University Utrecht – Teaching Assistant
Freudental Institute - View videos about the work
Oktober 2017 – 2020
Various tasks in education for high school students and teachers. Tasks including but not limited to:

- Assisting students with their Arduino projects in an Arduino U-talent course.
- Assisting in the Simulation and Games U-talent course.
- Assisting, writing manuals and setting up lessons in gas chromatography (GC) at remote high schools. Including setting up the GC equipment.
- Translating the Mathematical Kangaroo competition for the visually disabled.
- Helping organize and assisting at conferences such as the Woudschoten Chemie beurs and Research Funding Days.
- Watch videos about it **here.**

University Utrecht – Teaching Assistant Logics
November 2018 – Jan 2019

- Answering and helping students understand the material of the Logics course for the Computer Science Bachelor.

University Utrecht - Student Tutor
Oktober 2017 – 2020
Helping students with the choices and challenges they face in studying the first year and informing them.

Content Creator
KRO-NCRV
Nov 2015 – March 2016
For the television program Willem Wever, a scientific program for children:

- proposing subjects and experiments to perform on television
- advising the moderators about the correct explanation of the content.

Projects

Force feedback for elbow joint - View short video on Portfolio

- Proof of concept for force feedback exoskeleton for VR.
- Mechanical parts completed except for welds.
- Torque controller built from scratch (sadly shorted in later stage).
- Loadcell to measure force
- Done in spare time, not for study.

VR-exo full force feedback locomotion - Download research from portfolio

- Market research for a full force feedback exoskeleton for lower extremities.
- Suitable for rehabilitation, telerobotics and infinite walking in virtual reality.
- Done in spare time, not for study.

Animation Engine – View project video

- Animation engine built from scratch
- Load rigged mesh files in multiple formats
- Drag an animation file to it, see it move
- Built with C++ and OpenGL

Physics simulations – View project video

- Rigid Body simulation and Soft body simulation
- Graded with 10/10
- Wrote in C++, and another simulation in Unity with only self-implemented physics.

Hand detection - View project wiki on Github

- Built from a template allowing to load an image and save an image.
- Featuring handtracking and detection without an external library. The background is a beamer table, which occludes the hand. The hand can be rotated in any direction.
- Graded with a 9/10**,** built in C#.

Ray and path tracers Tracer - View images and explanation

- Built from a template enabling to color individual pixels on the screen.
- Featuring refraction, anti-aliasing, triangle support, spotlights, Lambert-Beer, textures, area lights and multithreading (205% speedup on dual core h).
- Simulation with BVH (bounding volume hierarchy) to draw a large number of triangles fast.

Webshop Fastdining - View project wiki on Github

- Built for the web technology course.
- Includes a login, register, update profile, buying products and order history.
- Graded with 9.75/10.
- Built with Node.js + ExpressJS, Javascript, SQLite, HTML and CSS.

View many more projects and videos on my Portfolio:

www.amberelferink.com