Amber Elferink

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Spatial Computing developer: VR, Robotics, Haptics

Virtual reality will provide lasting experiences. My goal is to make VR as immersive as possible, for as many people as possible, by making interactions more natural (for example through locomotion, haptics, tracking, and other interactions). For a visual resume (with 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	Utrecht University Game and Media technology Master
Graduated June 2024 Dutch grade: 8.6 / 10	**Graduated July 2024** Dutch grade: 8.5 / 10

Computer Science Minor

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

Chemistry Bachelor

Sept 2014 – June 2017

Skills

Languages

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

Others

- ✓ Arduino
- ✓ Adobe Photoshop
- ✓ AutoCAD Fusion 360
- ✓ Adobe Illustrator (Basic skills)

Work experience

Software developer
SenseGlove
June 2023 – Current
Working in the software team, I adapt to varied responsibilities. Some examples are:

- **Unity Water Interactions:** Developed a VR water demo for marketing, featuring realistic interactions like pouring, surface spreading, rippling, color change, and swirling via a mixer. The full demo including this was optimized for standalone VR headsets. Created with particle effects, scripts and Unity shadergraph.
- **User experience improvements:** Redesigned the customer's first time setup, glove connection, and glove calibration for a better user experience. Designed and implemented the calibration to have clear, gesture-based instructions, allowing smooth setup even across language barriers. The improved UX, reduced support requests and enabled efficient first-time (connection) setup including troubleshooting for existing and new users.
- ***Force feedback haptics:*** For new telerobotics gloves, I worked on the force feedback controller in firmware. The controls were tuned to feel transparent when no force was applied, while simulating rigid and squishy objects and several effects when force feedback was enabled.

Master Thesis at Freeaim
With Freeaim VR shoes, you can walk in virtual reality, while the shoes keep you centered within your living room. My thesis topic was: "Walking on Powered VR Shoes to Virtual Reality Motion: a User Experience Evaluation". For this, I created a VR simulation in Unity where users could move around purely based on data from two Vive trackers on the feet (so the algorithm would work for any locomotion technique). I researched both what the best algorithm was for this, and what the general user experience was while walking on the VR shoes.
My role at Freeaim was broader than just my thesis. I helped developing the first versions of the software, mostly C++ interfacing with Bluetooth Serial and OpenVR (SteamVR), in addition to troubleshooting and fixing the hardware, helping with marketing (website, pitch deck), and helping to obtain funding from grants or investors.

Internship at SenseGlove
Juli 2021 – September 2021
For my internship I added a joystick and buttons to the glove, for better compatibility with controller based software and games. I handled electronics, firmware, software, and CAD design using C, C#, Unity, and AutoCAD Fusion 360, creating a comfortable and well-integrated joystick and button setup. This addition, fully implemented in SenseGlove's software, was well-received and is a first step toward making the gloves compatible with many VR games and simulations.

Software Developer
Fair2Media - View videos about the project
May 2019 – August 2019
Between my bachelor's and master's, I worked at Fair2Media on the Ditou table, an interactive projection table that uses a camera to track round disks, which can be used to virtually place objects like windmills and solar panels on a map. I developed a new tracking algorithm for the disks using C++ and OpenCV. Additionally I built a Unity environment to load, customize, and place objects on 3D maps. Communication between tracking and Unity was managed through NodeJS. The table now demonstrates outcomes of solar and windmill setups for community projects.
Watch a video about it **here.**

View more work, videos, and more info on my studies at:
www.amberelferink.com/workexperience

Projects

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.

View many more projects and videos on my Portfolio:
www.amberelferink.com/projects