

# Amber Elferink



[amberelferink.com](http://amberelferink.com)



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*Robotics and Game master student with an interest in Virtual Reality hardware.*

*Natural locomotion and haptic feedback in virtual reality will provide lasting experiences. My goal is to make VR as immersive as possible, for as many people as possible. For a more visual CV (same contents but more images, videos and information) go to: [www.amberelferink.com](http://www.amberelferink.com)*

Education		Skills
Double Master: Robotics & Game and Media Technology <a href="#">View courses and material covered here</a>		Languages
		<ul style="list-style-type: none"><li>✓ C#, C++ (OpenCV, Arduino, OpenGL)</li><li>✓ Unity</li><li>✓ Python (Tensorflow, OpenCV)</li><li>✓ Javascript/NodeJS, SQLite, HTML (+ pug)/CSS</li><li>✓ Dutch (native), English (C1-C2)</li></ul>
Sept 2020 – July 2022 (expected) Current grade (8.2 / 10)	Sept 2019 – July 2022 (expected) Current GPA 4.0/4.0 (8.46 / 10)	
Computer Science Minor	Chemistry Bachelor	
Sept 2017 – Dec 2018 GPA 4.0/4.0 (8.04 / 10)	Sept 2014 – June 2017	Others <ul style="list-style-type: none"><li>✓ Adobe Photoshop</li><li>✓ Adobe Illustrator (Basic skills)</li><li>✓ Arduino</li></ul>
Work experience		
<b>Lead Software &amp; Co-founder</b> <b>Freeaim</b> <i>October 2021 – Current</i> Freeaim is a startup with a team of passionate people creating VR shoes. With Freeaim VR shoes, you can walk in virtual reality, while the shoes keep you centred within your living room. The goal is to make them affordable and compact, and available for both businesses and consumers. For more information and a video, check out our website: <a href="http://www.freeaim.com">www.freeaim.com</a> My role within the company is developing the software, from embedded to SDK's, in addition to helping with marketing (website, pitch deck), and helping to obtain funding from grants or investors.		
<b>VR input Developer</b> <b>SenseGlove</b> <i>Juli 2021 – September 2021</i> For my master internship, I developed an input solution for SenseGlove. SenseGlove creates haptic gloves to grab, hold and feel objects in virtual reality (VR). However, most applications still use controllers as input. Some interactions such as teleport are not convenient with VR gloves. Adding this hardware would allow for faster interactions and more compatibility. My role in this internship was to add hardware to the gloves, such as a joystick and buttons.		

Creating the electronics, firmware, software and CAD were all part of this internship. This was done respectively in C, C#, Unity and Autocad Fusion 360. The result was a comfortable joystick and button implementation and a well-received demo. The joystick and button functionality was fully implemented in the current SenseGlove software. I cannot share footage of the design due to confidentiality, but the result was a great user experience and a well-received demo. This is the first step to make the gloves compatible out of the box with many games and simulations available on the market.

### 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 a 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 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](#).

**View work before 2019, videos and more info on my studies at:**

[www.amberelferink.com/workexperience](http://www.amberelferink.com/workexperience)

## Projects

**VR-exo full force feedback locomotion** - [Download research from portfolio](#)

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

**Force feedback for elbow joint** - [View a short video](#)

- Work on proof of concept for force feedback exoskeleton for VR.
- Mechanical parts completed except for welds.
- Torque controller built from scratch.
- Loadcell to measure force
- 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.

**View many more projects and videos on my Portfolio:**

[www.amberelferink.com/projects](http://www.amberelferink.com/projects)