POA Internship

**Main report internship assignment Health Concept Lab**

**Student:** Casper R. Tak

**Studentnumber:** 657313

**Client**: Rudie van den Heuvel

**Coach:** Jeroen Veen

**High School:** HAN Arnhem

**Education:** Embedded Systems Engineering

**Date:** 05-12-2022

# Preface

After attending both the S3 and S4 projects at the Health Concept Lab (HCL) at the HAN, I decided that this would also be a great place to do my internship. Since I have some learning goals left from my S4 project, I would like to finish those in my internship period. The goals I Have set are as follows:

* Improving and applying my planning skills to create more structure in my work approach
* Exploring and improving even further on PCB design by designing a PCB with KiCad V6
* Improving my programming basics and skills withing the language C, C++ and Python
* Explore and expand my horizon

The assignment that will allow me to get to these learning goals will be the fluid analysing device project. This project will focus on getting a better, smaller version of the fluid analysing device that was build by the S6 project students from previous years. The project is developed by Jeroen Veen, who is therefor my client.

This system will eventually be used as a mean to analyse water quality. Since people use a lot of medicine, especially since they get older and older, the urine and defecation contains medicine remains. This results in water getting polluted with these remains and that is harmful for organisms. The goals in the future will be to create a portable device that can easily and continuously monitor the water. Even further in the future the device will not only be used for fluid analysing but also recursive testing for (multiple) deceases.

Inhoud

[Preface 2](#_Toc112835954)

[Motive 3](#_Toc112835955)

[Companies and individuals involved 3](#_Toc112835956)

[Main and sub questions 3](#_Toc112835957)

[Goal and end product 4](#_Toc112835958)

[Theory 4](#_Toc112835959)

[Schedule 4](#_Toc112835960)

# Motive

My interest in health and care have grown exponentially since my S3 project. I got interested in almost anything health care technology related. I got into contact with Rudie van den Heuvel, who told me that the health concept lab was still looking for students that could help with several project including the water monitoring system. He told me about the possibilities of growing with my PCB and Python skills and this is what got me motivated to join the HCL. I think the health concept lab and it teachers are able to provide me with the help and knowledge I seek to gain.

# Companies and individuals involved

**Jeroen Veen** is the project leader. He will be guiding me mostly through all the ESE related questions, regarding programming. Since Jeroen is the project leader and the client, I will be working very closely to him.

**Rudie van den Heuvel** is a IPD teacher and knows a lot about materials, mechanics and designing in general. He may be able to provide me with knowledge on how to approach this project and whenever I want to do something with materials, he can assist.

**Health Concept Lab** is the lab that has been created around 3 years ago. The goal of this lab is to create a pool of knowledge on health on both mechanical as electrical ground. The lab is populated by students from S3 and above and there some teachers, who are well known in the subjects, as well.

**HAN** teachers can be consulted as well. Johan Brussen or Francesco Ursino for example are well known with power electronics. They can help me when it comes to supplying bigger loads with power. Other ESE or ELC teachers can also be of help. For EMC I can probably go to Ivo van Diemen De Jel.

# Main and sub questions

The soul reason of creating this POA is to gain an understanding of the project, it’s size and the required approach to work as efficient as possible. By knowing what is expected, what is not, and how I think I can approach things, it should be possible for me to create a planning.

To get a understanding of the project’s size and the current challenges, I need to know what the problems are.

Problem: there is currently no all in one compact and functional driver board for the device.

# Goal and end product

The goal is to create a water analysing device. My goal would be to create a printed circuit board along with software for the raspberry pi that will control the monitoring system and retrieve all the data collected by it.

# Theory

See OneDrive documents.

I’m going to approach this project via the V-model

# Schedule

See schedule document.