

Challenge name	Next gen hairscan
Challenge owner	Haardokters BV
	<input type="checkbox"/> Company <input type="checkbox"/> Research <input type="checkbox"/> Student team
	Name of personal contact
Email challenge owner	
Phone challenge owner	
CoC Number	
Preferred way to contact	<input type="checkbox"/> email <input type="checkbox"/> SMS / what's app
Brief summary	The way people feel about their appearance has an impact on their general happiness. Having a condition that makes one lose their hair could generate feelings of uncertainty and depression. In order to help these people, a treatment is possible. However, not all treatments work on all people, and that's why we need to be able to reliably scan the state of (a piece of) their head. Doing this at the same spot periodically is a challenge, as no technological system that allows for that currently exists..

About the challenge owner

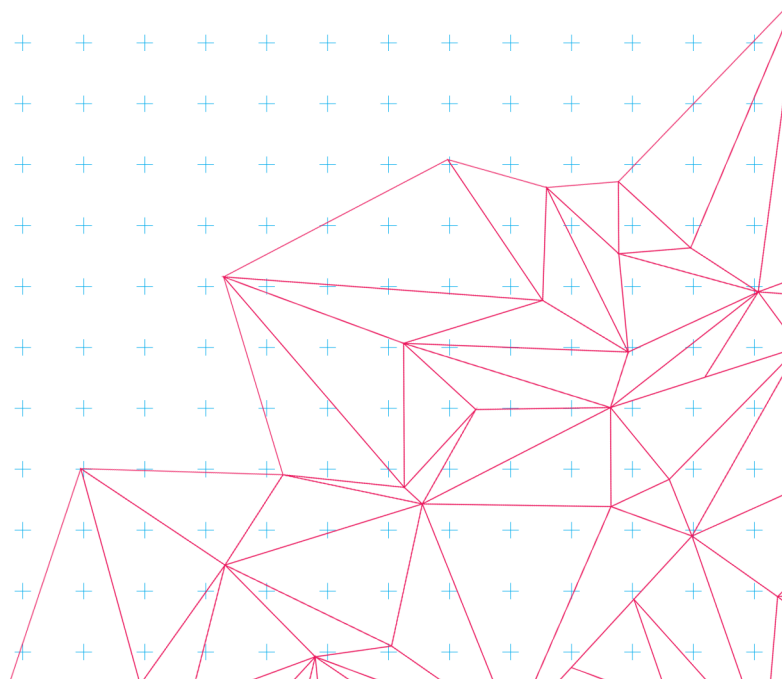
We are opening up a shop in Etten-Leur where our customers can get a scan of their hair to see if they are eligible for the treatment, and after that they can get our special treatment. This treatment is developed by a leading dermatologist with great experience in hair treatment. Using this treatment we hope to achieve a 90% decrease in hereditary baldness. After opening the shop in Etten-Leur as proof of concept, we want to unroll our concept throughout The Netherlands.

Challenge description

We want to create a world without baldness. We have created a special method to cure hereditary baldness. To measure the progress of the treatment, we are going to make scans of the hair of our customers. With these scans, we can show them the improvement they are making, and we can also create a data set to prove our treatment's effectiveness.

We are going to use special scanners from Canfield. They look like hand scanners in the supermarket and are normally used to do a single scan at the start of a treatment to diagnose the disease of the client. However, we want to take things further and do a yearly scan to measure the improvement of the client. This gives us relevant data about the treatment as a whole, but also measures the exact improvement of the client.

However, the scan only takes about 1 square centimeter of the hair of the client. If you do not take the same area of the hair every year, the comparison of the scans will not be reliable enough to conclude whether an improvement has taken place. This means that we need to come up with a solution to make the scans on the same place every year to get a reliable data set, or a different method to make the scans reliable enough to be able to use the data. The device is already in use at some companies throughout Europe so some data is already available, but we are the first to use in in The Netherlands.



Challenge picture

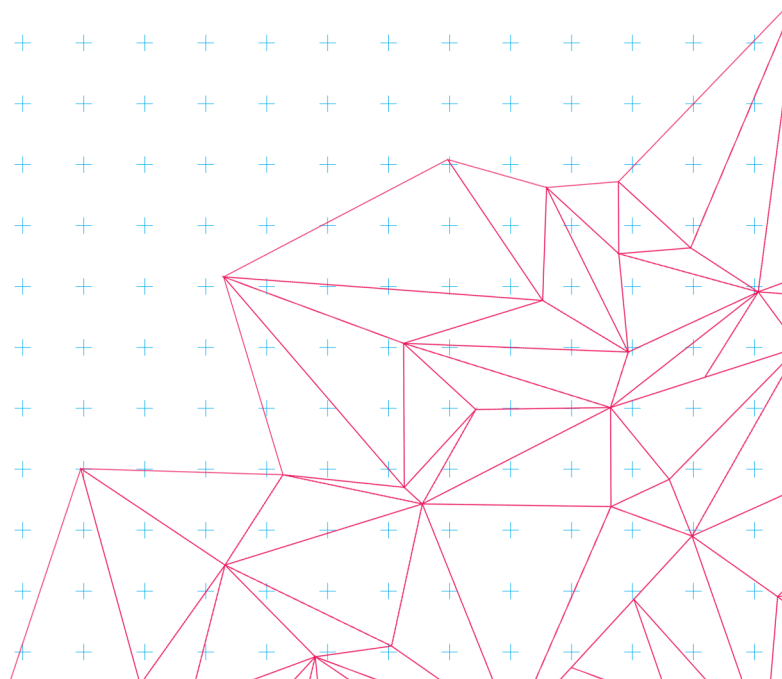


Input and involvement of challenge owner

I will be available for meetings to discuss the progress of the project, but will also always be available for help via phone or Whatsapp.
Solving the problem would mean we could use the data to prove our method and also to give the customer prove that the treatment is working.
This would advance our project massively.

Resources

The students can use the expertise of the dermatologist, who has great experience in using this kind of scans. Also, the company who creates the scanners will be available for help and the students could come to the store to use and assess the device.



Roles of different disciplines (only for ISBEP)

Automotive Technology	A potential solution could contain several moving components that should end up at exactly the right location for the scan. Applying knowledge from control systems and sensing technologies could help with this.
Biomedical Engineering	Scans of pieces of the head will collect information about (potential) hair growth. Analysing effects of a treatment over time on the quality of the hair is needed for a functional product.
Electrical Engineering	A potential solution could contain several moving components that need to connect to the scanning device and a data storage device. Building the technical infrastructure around this is a topic in which an EE student could assist.
Industrial Design	Designing a solution that is pleasant for the client to make use of, as well as easy to use for the controller, is something an IS student could help with.
Medical Sciences and Technology	Scans of pieces of the head will collect information about (potential) hair growth. Analysing effects of a treatment over time on the quality of the hair is needed for a functional product.
Psychology and Technology	We often see that clients do not have the feeling that anything changes after their treatment, while data shows that there actually are positive effects. How can we best convey information about the effectiveness of treatments to clients? Or, how do we design a new device that is pleasant to use?
Industrial Engineering	A newly developed technology could potentially have good market value, but it is unknown how large this market is and how this technology could be best introduced to this market.
Applied Physics	A potential solution could contain several moving components that should end up at exactly the right location for the scan. How do we know that the sensor is scanning the same piece of the head as last time?
Applied Mathematics	When scans are made, much data is collected about the state of the hair in that little part of the head. How can we develop mathematical equations that could inform us whether the scanning system is placed in the exact same way or not?
Mechanical Engineering	A potential solution could contain several moving components that need to connect to the scanning device and a data storage device. Building the technical infrastructure around this is a topic in which an ME student could assist.

