

Industrial Design Honours - IDES 4112
Class of 2022

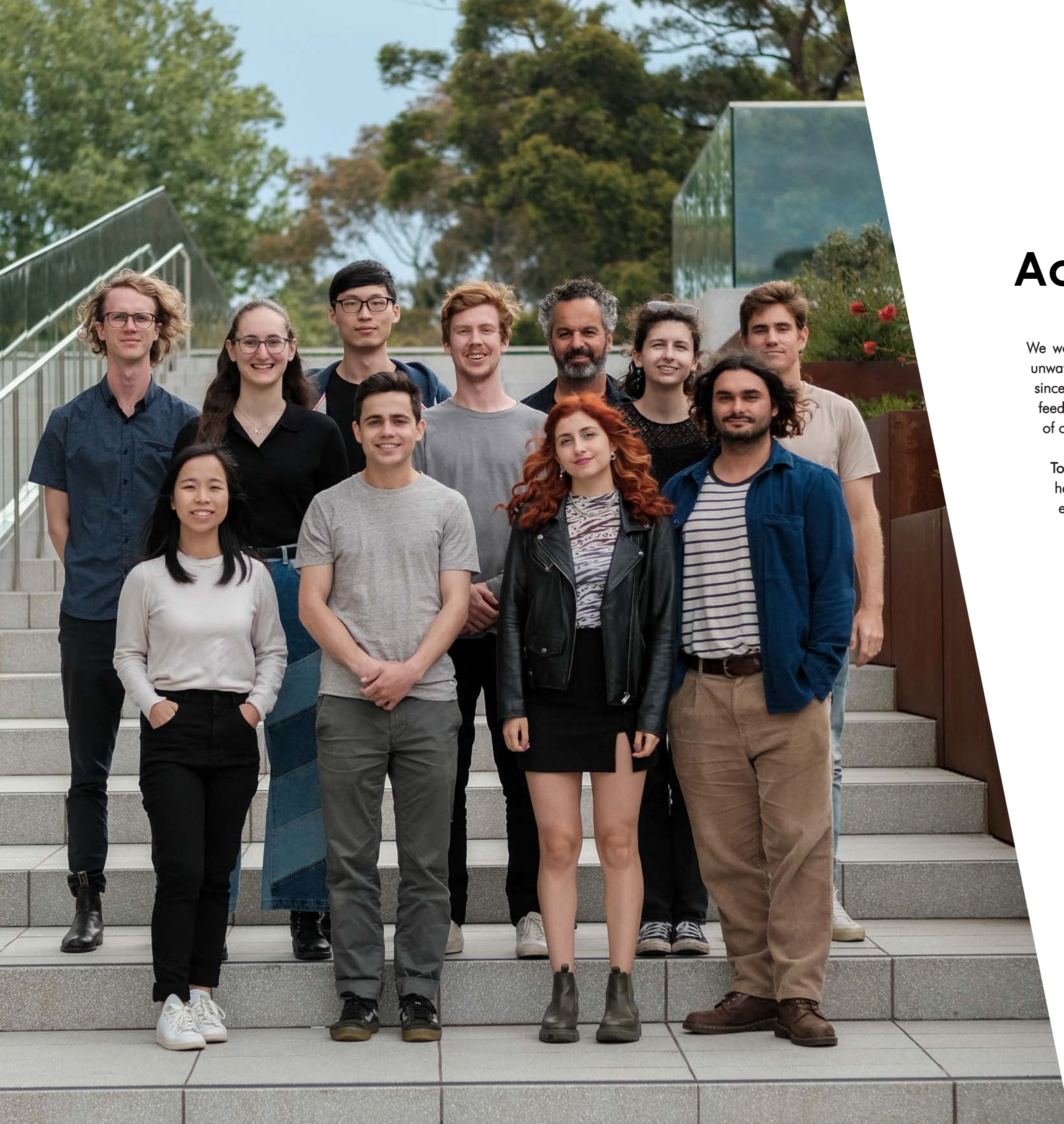


“We would like to acknowledge the Bedegal people that are the traditional custodians of this land. We would also like to pay our respects to the elders both past and present, and extend that respect to all Aboriginal and Torres Strait Islander people.”



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Acknowledgements

We would like to acknowledge the UNSW staff and academics for their unwavering support of the Industrial Design Class of 2022. We send a sincere thank you to all who taught us the design process, gave us valuable feedback, and inspired us to be better designers over the past four years of our design education.

To Dr Mariano Ramirez, our Program Director, thank you for your hard work behind the scenes in providing us with a thorough design education.

To Gonzalo Portas, our capstone project Course Convenor, thank you for your mentorship for each of our capstone projects, as well as guidance in organising the final exhibition.

Thank you Prof Oya Demirbilek, Dr Miles Park, Dr Christian Tietz and Danielah Martinez for supervising our projects throughout this year.

Special thanks to the staff at the UNSW Design Futures lab for providing technical assistance to the prototyping stages of our projects. Thank you Nichola Jephcott, Gabriel Undery, George Papadogiannis, Nic Snowden, Madi King, Richard Blackwell and Heather Clement.

Additionally, we would like to acknowledge past academics, Rina Bernabei and Stephen Ward, who have inspired us in many ways during their time at UNSW.



Director's Message

The learning and teaching of Industrial Design has a five-decade-long history at UNSW. In 1968, we offered the first Graduate Diploma in Industrial Design in Australia. In 1982, that 1-year diploma became the Master of Industrial Design program, and in 1990 we launched the 4-year Bachelor of Industrial Design degree. As of last year, the combined total of our undergraduate and postgraduate alumni was 1288, representing 34 countries worldwide. This year we are proud to add a further 12 new graduates for our 4-year Bachelor of Industrial Design (Honours) and 29 new graduates for our 3-year Bachelor of Industrial Design.

The majority of our graduates have been employed in some of the most highly regarded design consultancies and well-known manufacturing companies in Australia and overseas. Several of them have become CEOs, entrepreneurs, and founders of their own firms. Many have risen to significant leadership roles as chief design officers, managing directors, design managers, principal designers, and senior industrial designers.

Several of our students and graduates have received national and international recognition for their outstanding work, from Good Design Australia, James Dyson Award, Design Institute of Australia, Red Dot Design Award, iF Design Award, World Packaging Organization, and others.

Our Bachelor of Industrial Design (Honours) cohort this year follows this long tradition of design excellence and achievement at UNSW. The products displayed in this catalogue provide a glimpse of the breadth and depth of their knowledge, abilities, skills, and experiences as emerging industrial designers. This year's students have challenged themselves with various issues and opportunities in 21st-century society that demanded entrepreneurial mindsets and innovative problem-solving approaches. They have applied state-of-the-art technologies and experimented with novel materials and forms to arrive at life-centred solutions, ranging from biomedical therapy devices, life-saving interventions, consumer electronics, agricultural and biosystems engineering, and physical activity equipment.

I commend our graduating students for the hard work that they have put into their impressive projects in this catalogue. Congratulations on your fantastic achievement! You have certainly risen above the unprecedented challenges of university study amid the COVID-19 pandemic.

We your lecturers – Oya, Miles, Christian, Gonzalo, Danielah – and sessional tutors are fortunate to have played a small part in your success. I thank my team for their selfless dedication in guiding our young designers-in-training, ensuring that they become the responsible innovators of the next generation, and helping them unleash their full potential.

I wish you the best in your careers. I hope that you achieve your lifelong dreams and realize the future you envision. My appeal is that you design the world to be better for all of us and your children's children. Godspeed!

Dr Mariano Ramirez
Director, UNSW Industrial Design Program



Convenor's Message

The Industrial Design Honours Program is the culmination of 4 years of study at UNSW. It is a selective program for students who have attained a consistent high standard of academic achievement in our undergraduate program and is an opportunity for students to showcase their ability as emerging industrial designers.

My work with young designers is always filled with excitement, privilege and admiration. There is great responsibility in our roles as educators, and I take great pride in providing a learning environment that is both inclusive and supportive for our students.

As the next crop of graduates continue their journey into industry, I am left in no doubt that the Industrial Design Team at UNSW has provided a solid foundation for our students and prepared them for a wonderful vocation in design.

It brings me great joy in acknowledging the wonderful efforts and achievements of our students in 2022 and I am confident that these students will have great impact as designers in an exciting future filled with challenges and opportunity.

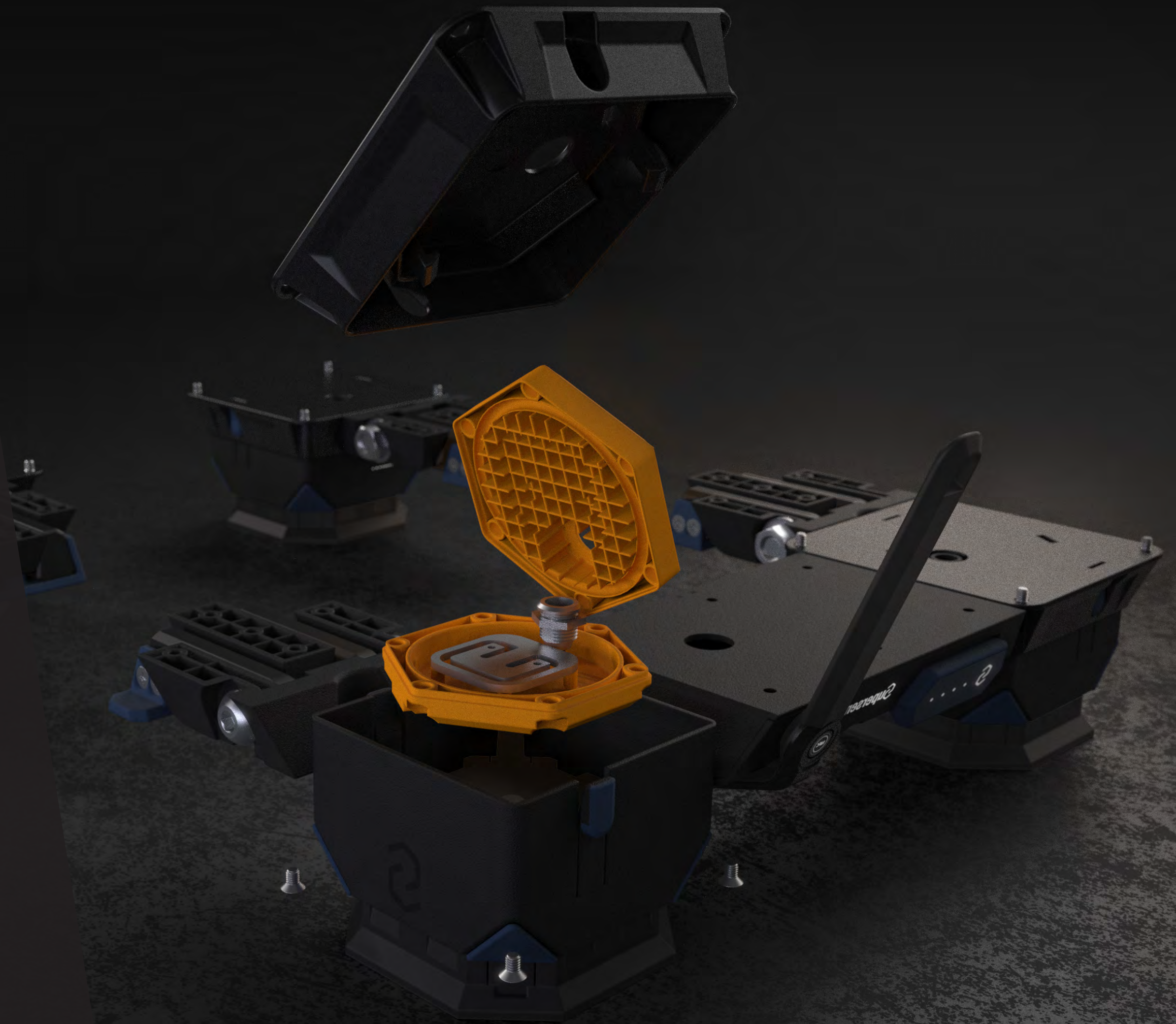
Gonz Portas
Course Convenor

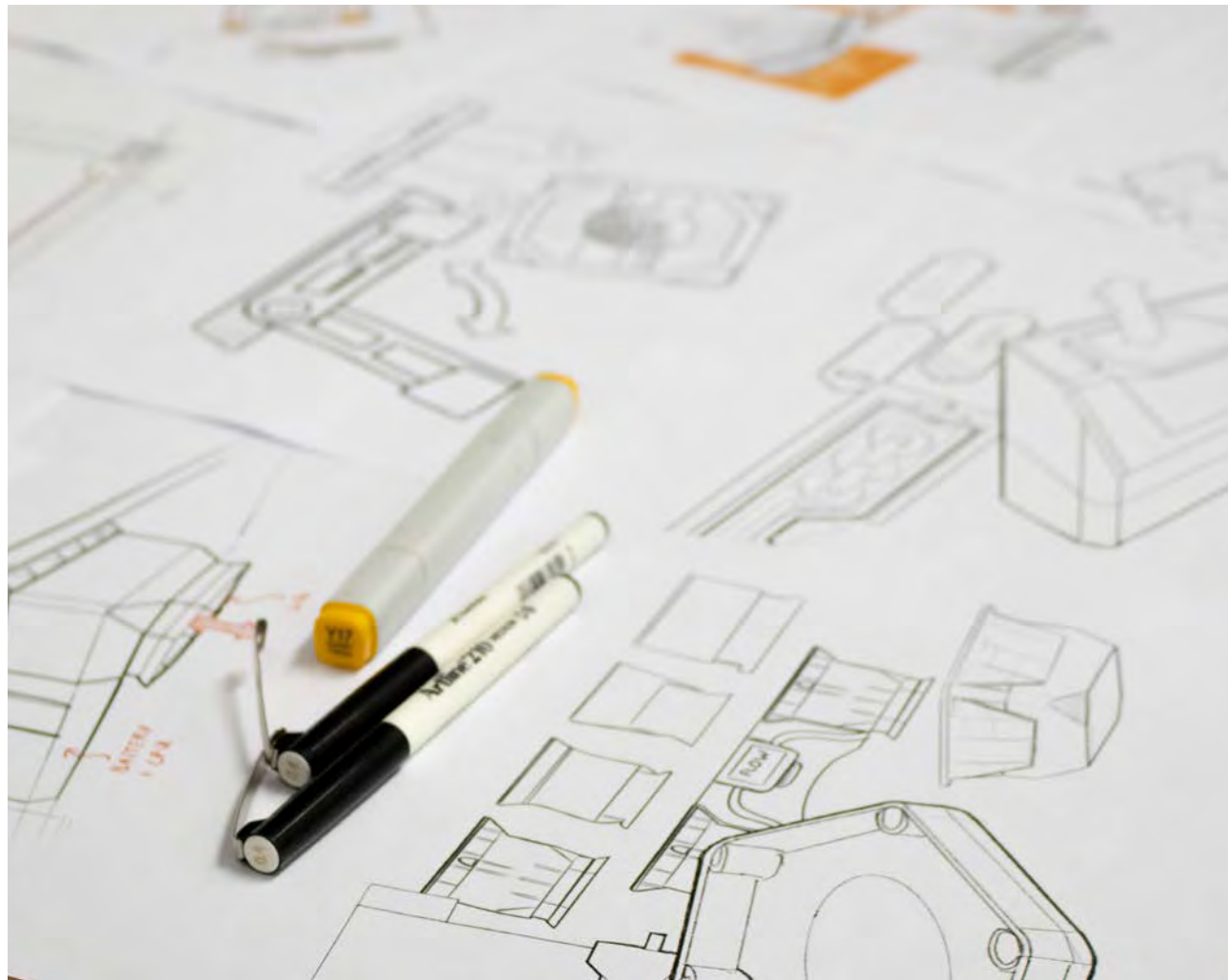
Supersend

Supersend is a beehive weight monitor, designed to make Australian commercial beekeeping vastly more efficient.



Aidan
Whitby



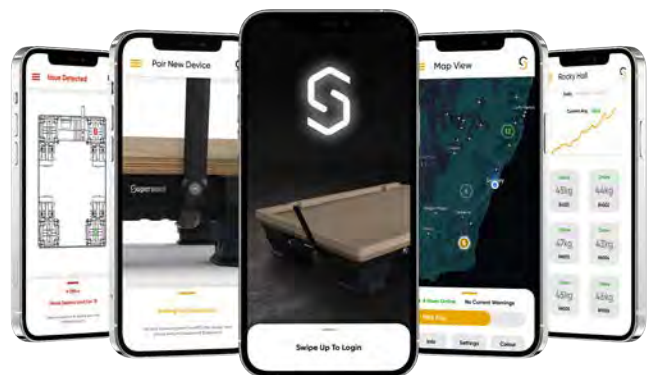


Supersend is designed to make commercial apiaries (beehive sites) more efficient by allowing a beekeeper to see the condition of the hive without having to be on-site. It measures the weight of the honey super boxes (where the bees store the honey on a beehive) and sends it to the app via the 4G network.

Research was conducted to examine the current situation in Australia. This was done with an aim to generate key findings and inform my design. I needed to make a product that was designed for the management techniques that Australian beekeepers use, which greatly differ to other areas of the globe. This is due to our unique flora and the increased distances between beekeeping sites.

The product consists of four legs (containing the weight measuring cells) and a landing plate. Any standard commercial beehive can fit on top and be measured using the Supersend. It has also been developed to take on the harsh Australian environmental conditions, be extremely easy to change parts and features a 'transportation lockout' which means the hive doesn't need to be removed from the Supersend during transport.

While this isn't the first hive load scale, it is the first designed with the user in mind. Other options have experienced close to zero percent uptake by the Australian market. This can be put down to; high initial and ongoing costs, minimal data security, unergonomic designs, and lack of reliability, all of which the Supersend addresses.



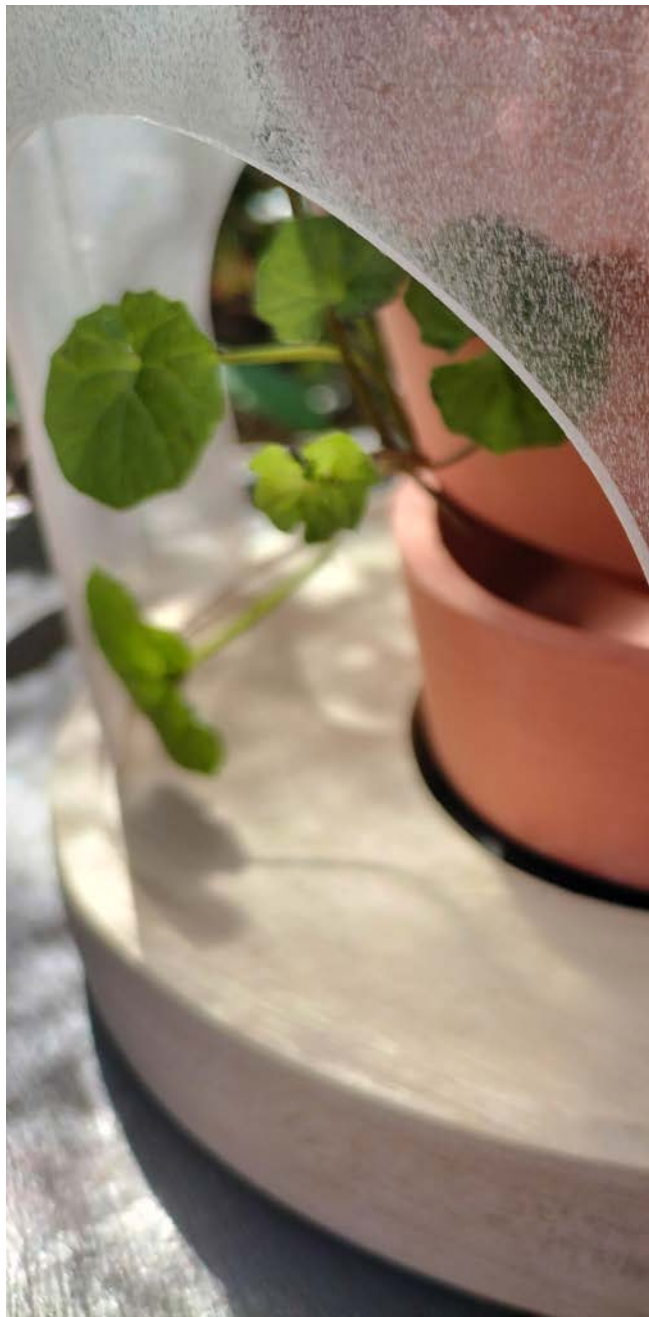
Refuge

A plant pot / shelter that protects and celebrates native Australian insects in urban environments. To help create multi-species communities and reduce the effects of habitat simplification.



Caroline
Leigh





Declining insect populations are plunging the world towards ecosystem collapse. Despite this, insects are often overlooked for conservation and disliked by the general public. Furthermore, with our expanding urban areas comes threats like habitat simplification, and apathy to nature. Thus, Refuge aims to create enjoyable and educational interactions between adults and insects.

When the user waters the native plant at the top, the terracotta pots absorb the water and create a cool moist environment inside, providing insects with nectar, water, shelter from the weather, and protection from large predators.

Refuge's materials were carefully selected to be sustainable, insect friendly and aesthetic. The curved asymmetric pots and slight variations

in each slip cast create a soothing organic feel, emphasized by the warm earthy colours and Victorian Ash base. The frosted glass cover provides a pleasing contrast to the terracotta and helps create humidity and start conversations.

Refuge has a customizable design, that allows users to select the parts, sizes, and glaze colour they want from a website. Moreover, its versatility and easy set up encourages experimentation with what best suits the user and attracts insects.

When Refuge eventually reaches the end of its life, the glass cover can be put in the curb side recycling, the wood can be taken to a recycling plant, and the terracotta can be repaired, or reused. Furthermore, the customizability makes it easy for users to purchase replacement parts.



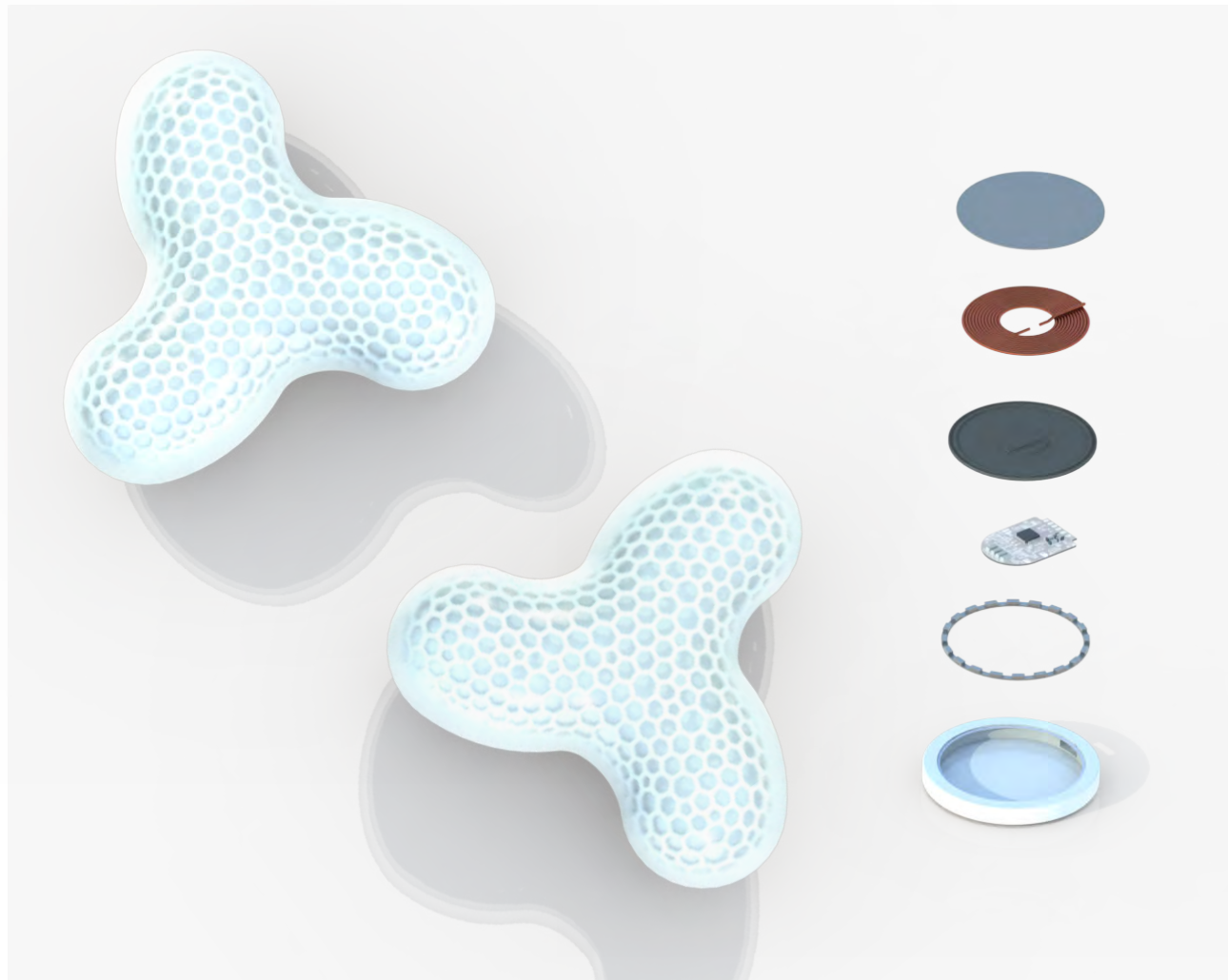
Rhythma

Rhythma is a multi-sensory device that is designed to cater for the needs of adults with sensory sensitivity caused by ADHD. It provides a metronome beat that has a range from 40 BPM up to 90 BPM, followed by vibration and light pulses to help create a peaceful state of mind especially when in distress.



Cecilia
Jusuf



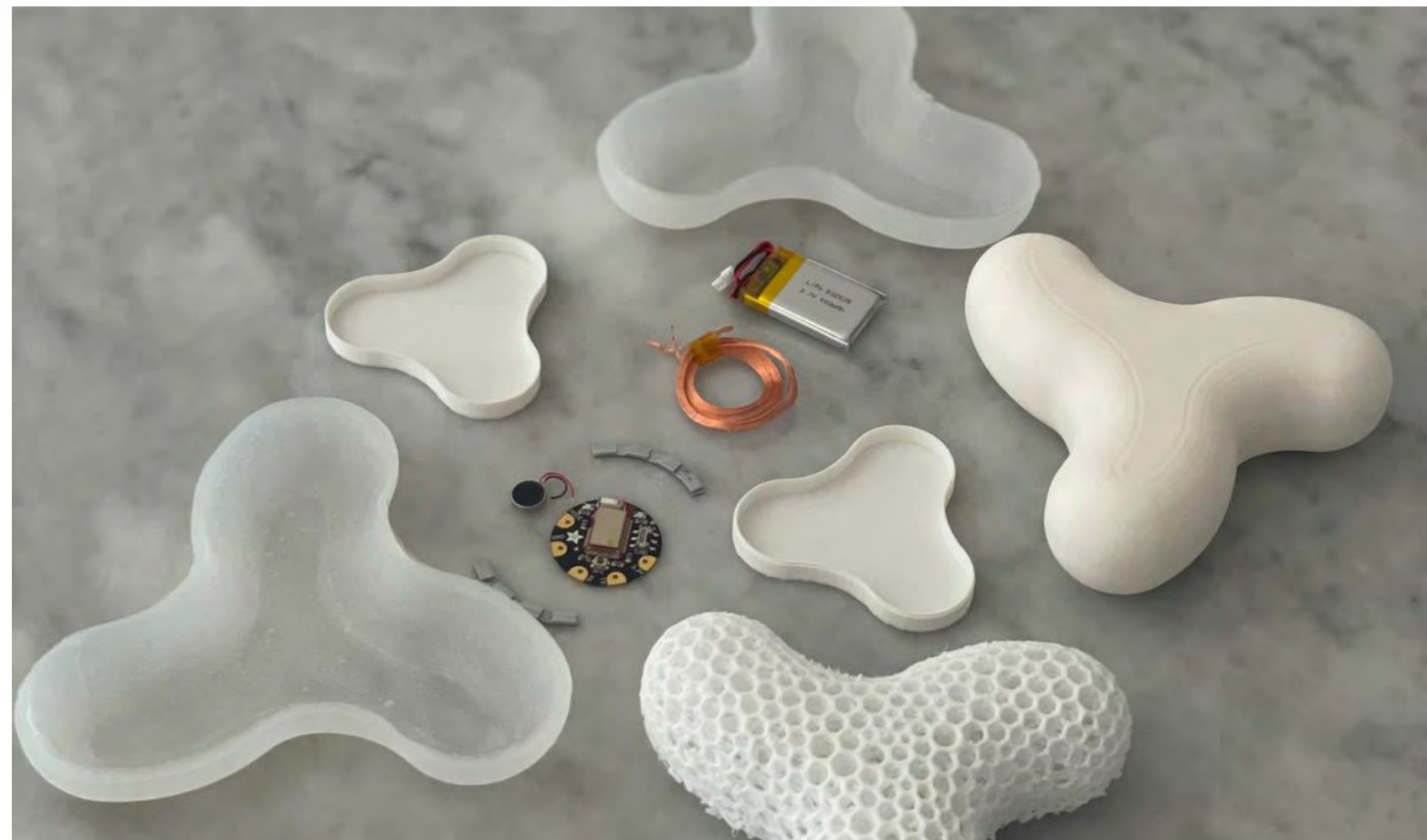


Undiagnosed and untreated ADHD could be detrimental for a person's everyday life. A person with ADHD symptoms such as impulsivity, emotional reactivity, over-activity, or self-regulation may have a hard time knowing when it's all too much — before they reach that threshold of response that puts them at sensory overload. Moreover, when the body perceives sensory stimuli as potentially dangerous, it is extremely difficult to anticipate logical, sensible answers.

Therefore, after extensive research and a myriad of experiments, Rhythmia was designed with the aim to help those with ADHD regulate their sensory sensitivity better through a multi-sensory experience. The desired outcome of these experiences is a tranquil mindscape that could

help the user reduce emotional dysregulation and put an end to the mind's eternal restlessness.

There are three main features of Rhythmia that incorporate three basic human senses that are easily stimulated. A malleable skin on an organic shape provides tactioception (touch), a voronoi pattern with pulsing lights underneath the skin provides visual perception (sight), and a vibration that responds to the metronome rhythm stimulates auditory sensations (hearing). An application that could be downloaded on smartphones would allow users to have full control of Rhythmia's features as well as additional features such as bluetooth connectivity to headphones, grounding exercises, and white noises.



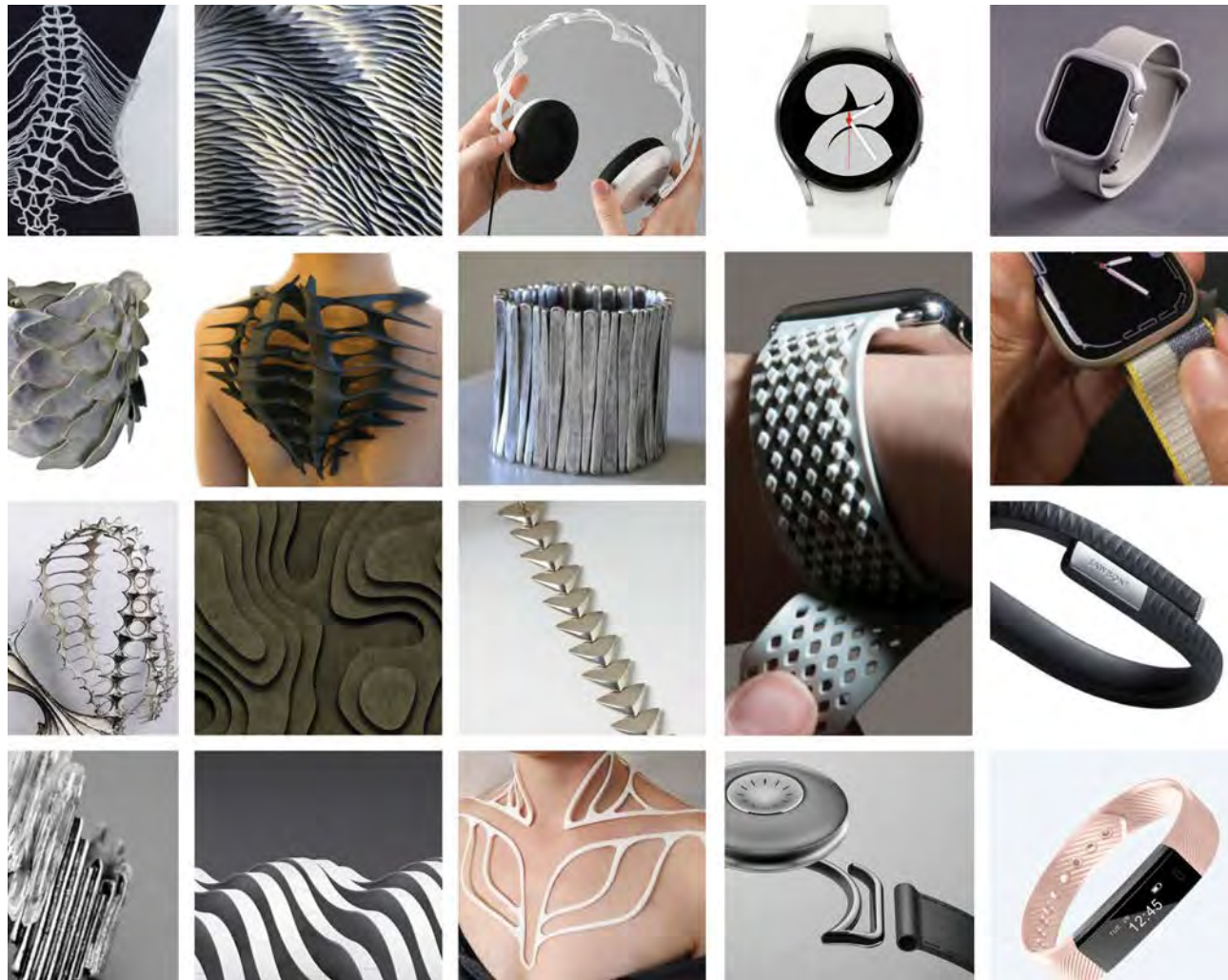
Fit Together

Imagine one day walking into a place you once felt accepted in and no longer having that acceptance once a part of your identity has changed. This is the reality for trans and nonbinary folks in gym spaces. However, it is the responsibility of the gym to take initiative and be inclusive of all fitness enthusiasts regardless of their gender identity. This is why it is vital to increase the safety, comfort, motivation and confidence of nonbinary people by increasing their community engagement while exercising at the gym.



Damla
Hatipoglu





Fit Together is a fitness tracking device designed for the social and physical needs of nonbinary people who exercise at the gym. It's aimed to make the exercise experience safer, more welcoming and more enjoyable for them.

This fitness tracker is designed to increase the overall social engagement of gym members by connecting their goals with their daily interactions at the gym. The members get to choose their social goals when they first get their app. The choice is made from a selection of options such as meeting new people, talking about exercise goals or creating a community. When they're interacting with other people they log this to go towards the weekly progress they make. All of the social progress they make can be measured against their initial goals. The awareness the members have while

socialising with the device, prioritises social engagement and makes it easier to interact with a wider group of people.

The device has optical and electrical heart sensors, blood oxygen sensor, a pedometer and a GPS sensor to provide all the features typically found on a fitness tracker. Enlightened with research into gender neutral tech design, this device is made to suit the personal style of a wide scope of gender expressions. During the prototyping process, the watch strap was tested to be adjustable for a range of different wrist sizes of the nonbinary target user group. The Fit Together watch's body is made of overmoulded silicone, a stainless steel casing, always-on retina LTPO OLED display screen and a built-in rechargeable lithium-ion battery that lasts up to 18 hours.



HeartHub

HeartHub is a fully implantable ventricular assist device designed to improve the clinical outcomes and user experience of patients with end-stage heart failure.



Dorcas
Chu





App Prototype



Video

Heart failure is a chronic, progressive condition that affects more than 64 million people worldwide. While the gold standard therapy for end-stage heart failure is heart transplantation, receiving a left ventricular assist device (LVAD) implant has become the next best option due to heart donor shortage.

Some of the major pain points for patients with LVADs include the risk of driveline infections, carrying heavy batteries, as well as emotional fatigue reinforced by user-device interactions. Designed for improved user experience and clinical outcomes, HeartHub is a fully implantable LVAD that features a long-distance wireless charging system, thus eliminating the need of a driveline. It also uses graphene batteries that offer higher power capacity, allowing for a more compact and lightweight

design without compromising battery life. Unlike traditional LVADs with digital displays on the controller, HeartHub is paired with a cloud-based app via Bluetooth connection. The app is designed to ensure easy access to crucial information such as pump statistics and emergency signals.

The HeartHub patient kit contains a controller, a waist band, two charging docks and four rechargeable batteries.

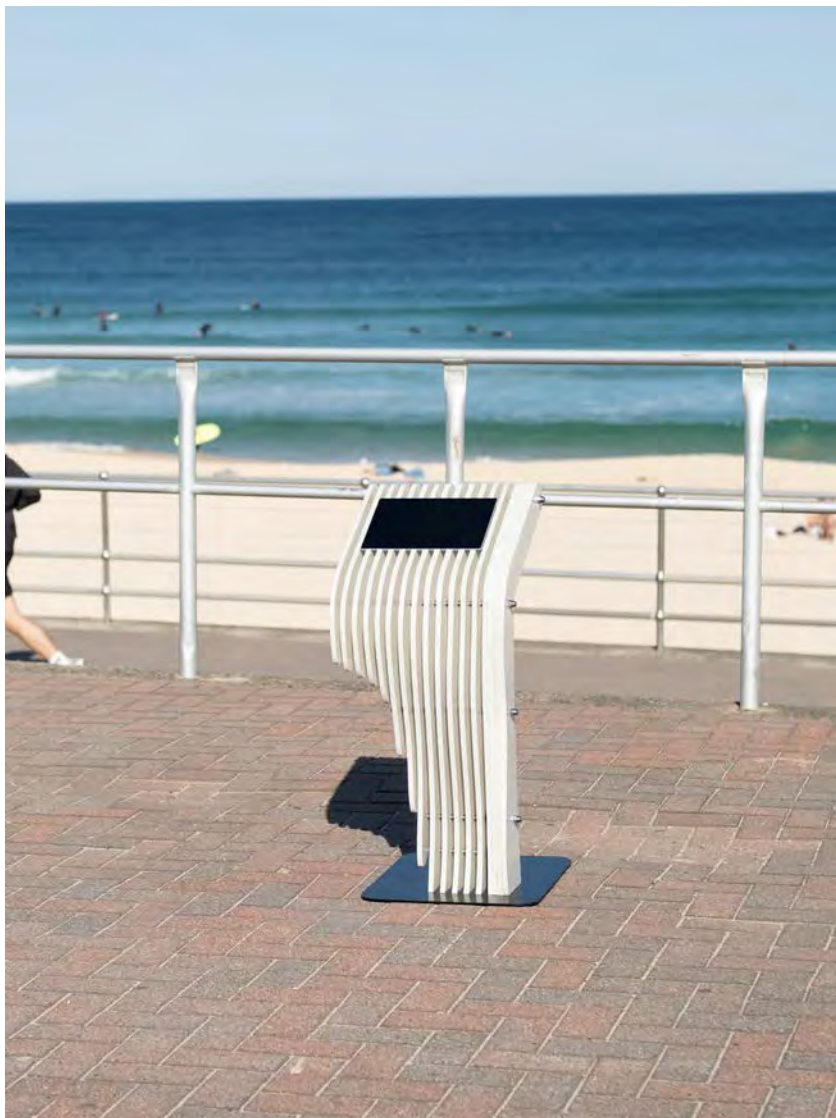
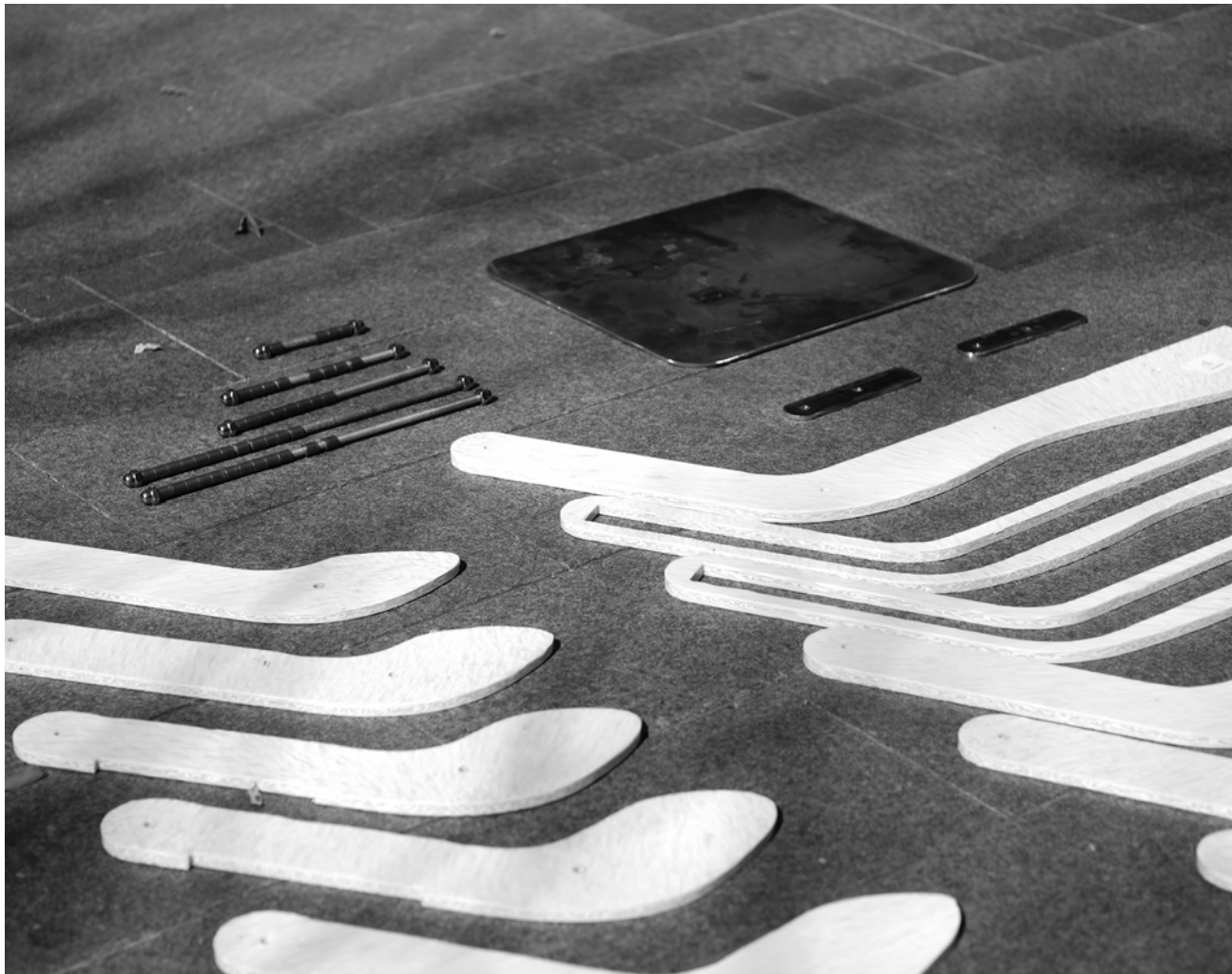
In the case of an emergency (e.g. a pump failure), the controller will vibrate, sound an alarm and display flashing LED lights. A mute button on the controller allows the patient to mute the alarm as they call for an emergency service. The patient's pump information is then transmitted directly via the app to the MCS coordinator for immediate analysis.

Rip Vision

To educate swimmers on how to spot rip currents through an engaging and interactive tool. Fulfilling the need to provide information about the dangers of rips in an impactful way.

Hugh
Johnson





Every year 21 people die due to rip currents. There are also millions of swimmers that experienced or witnessed near death events due to these currents.

Looking back at Rip current related deaths over the last 18 years there is no decrease in average death rates indicating that something needs to change.

The research shows that many people are aware of the dangers rips can pose but they are unable to identify where rips are when they get to the beach.

For the design to solve the problem it needs to educate people on how to spot rip currents quickly and easily. This meant that the design was based around the interaction rather than the form first. Mind-mapping, affinity

mapping and user testing was done to find the most effective solution.

It was found that showing rips at eye level was the most effective way of learning how to spot rips, this lead to experiments with Blender to visualise the rip currents in a wavy red grid to show the movement of the rip water and the location of the rip. Red was the most effective colour to convey a location not to swim.

Rip vision is an educational tool designed to engage beach-goers insitu. The design sits at the entrance to the sand at beaches in popular locations. It is fixed to the ground and self powered through a solar panel. It utilises camera mapping and AI learning to identify rip currents on a beach and then relays this to an interactive touch screen display.

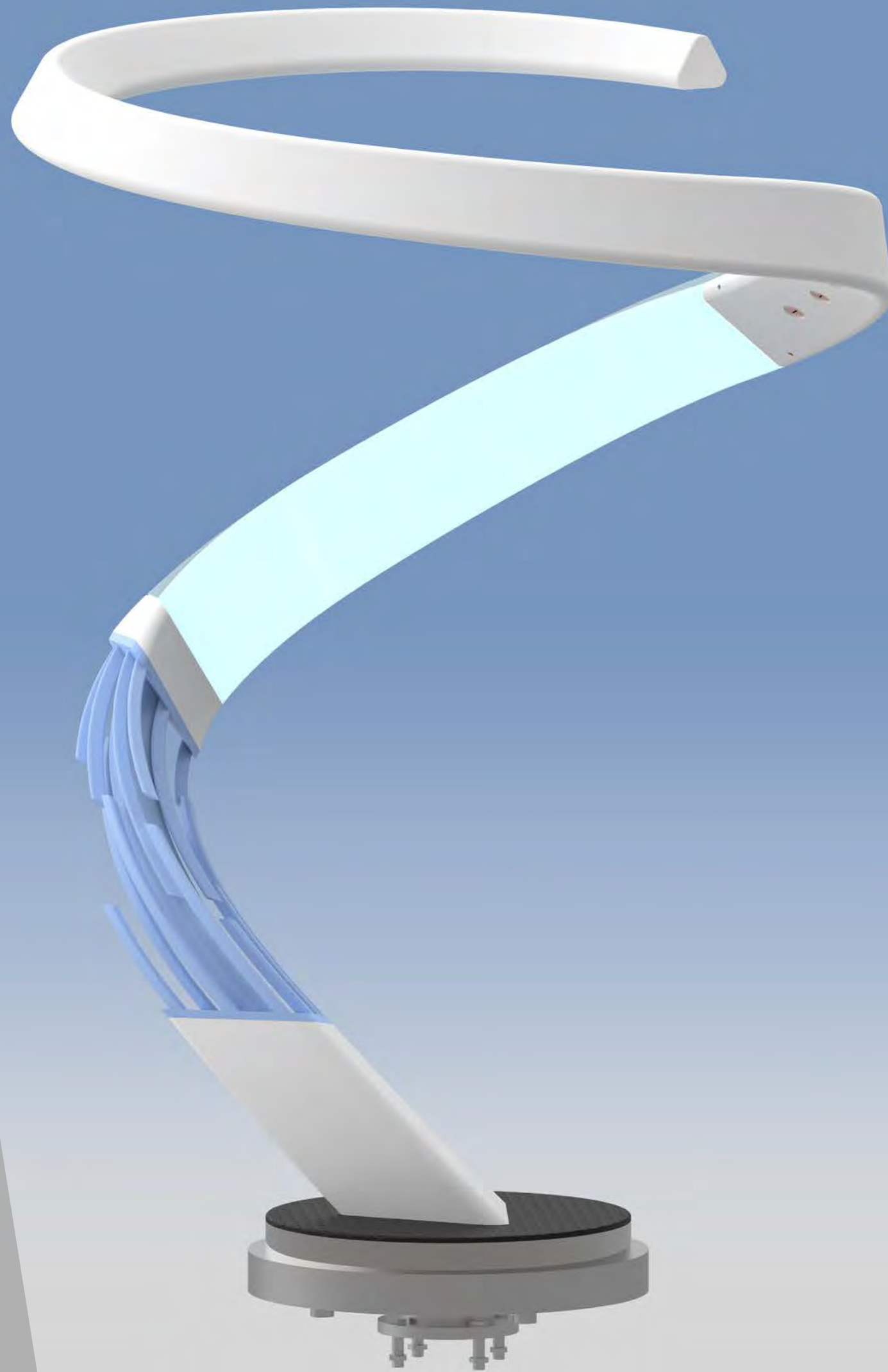


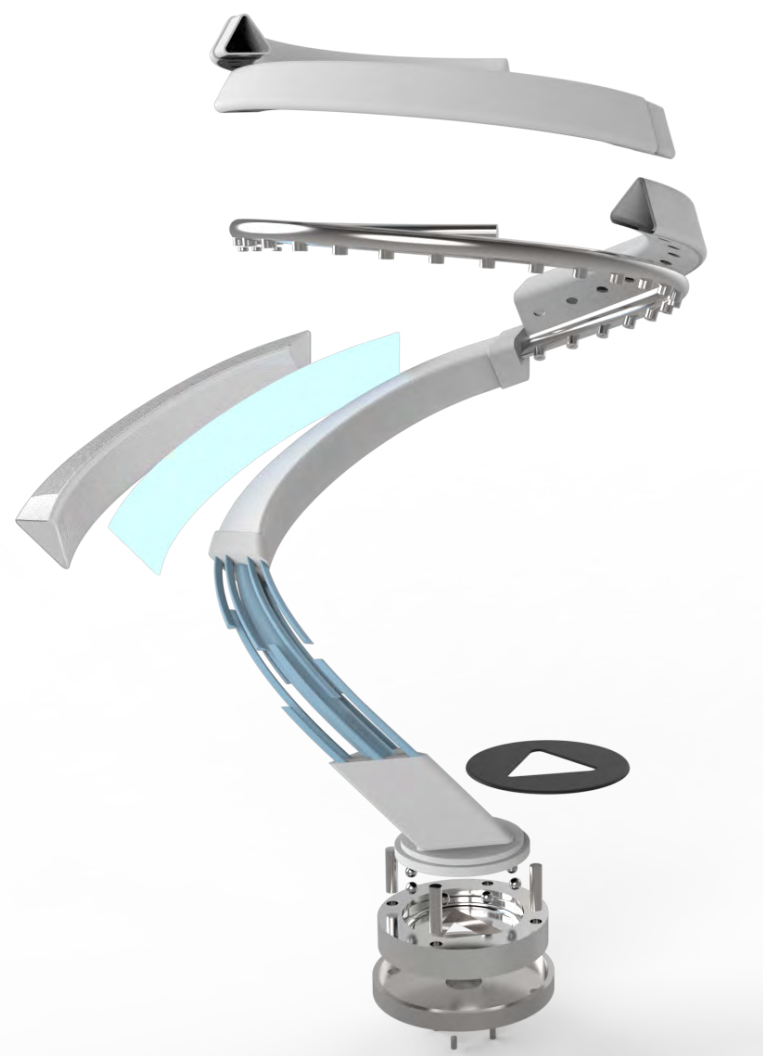
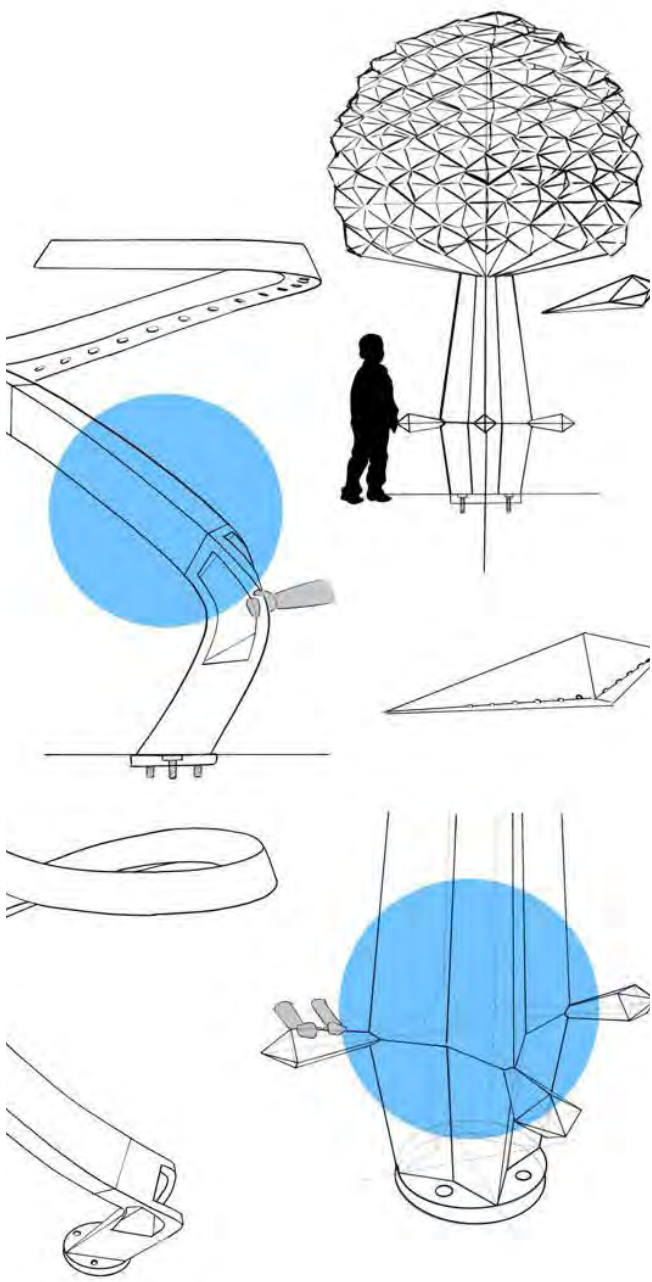
Watree

WATREE integrates the elements of electronic games into outdoor water play facilities, for children under six, in order to visually and spatially engage them.



Jiarui
Yue



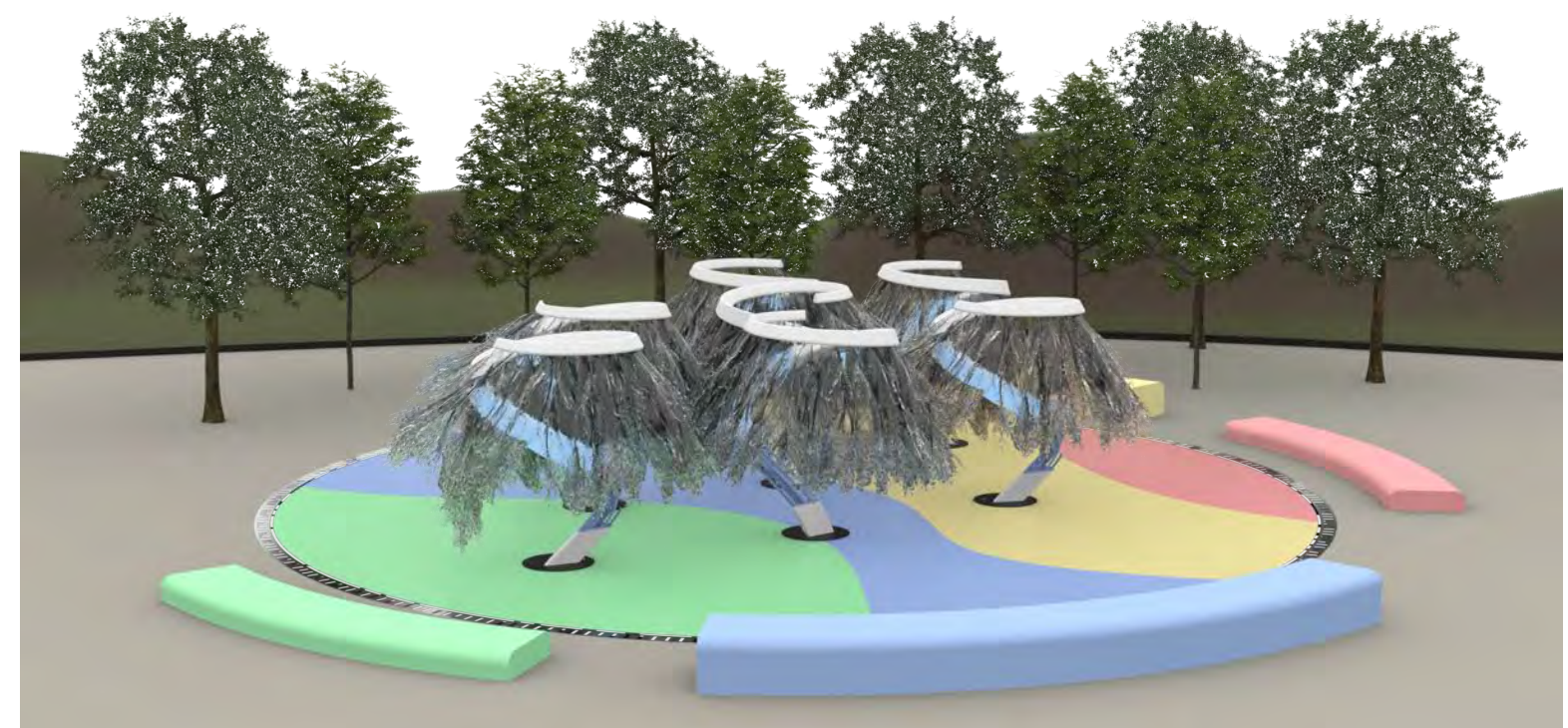


Inspired by the theory of the "sensitive period", this project aims to design outdoor water play equipment for children before the age of 6. The space formed by changing lights and water can be manipulated to help children in the sensory and spatial sensitive period grow up. "A sensitive period refers to a special sensitivity which a creature acquires in its infantile state, while it is still in a process of evolution. It is a transient disposition and limited to the acquisition of a particular trait. Once this trait, or characteristic, has been acquired, this special sensitivity disappears." (Maria Montessori)

Through my research, I learned that the time between children's physical activities and their use of screen devices has become unbalanced.

Therefore I added video game elements such as exploration, cooperation and interaction to the water play facility, to encourage children to do physical activity outside while they enjoy playing games.

The facility uses a corrosion resistant, lightweight plastic shell. Through the separateable shell design, the water pipe and the shell can be easily assembled, and the cost of installation, renewal or removal is low. Children can rotate each facility by using the handle. As the facility rotates, the built-in LED light will gradually change between multiple colors. A bearing structure is installed at the bottom of the facility to help children operate and play easily.



Optix

Optix is a helmet designed for cyclists who constantly battle with dangerous riding conditions. The design enables them to be alerted of dangers around them and alert other road users to their presence.



Keith
Perry





Optix is a smart helmet which essentially gives the user a second set of eyes. It utilizes emerging C-V2X which stands for cellular vehicle to anything. It is a unified connectivity platform designed to offer cars, infrastructure and most importantly VRU's the ability to communicate.

By connecting all these stakeholders together, it enables a cooperative intelligent transport system. Most importantly for Optix, this platform can allow for cyclists to be alerted of dangers and alert others of the cyclist's presence.

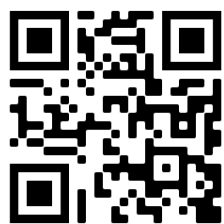
The service for example can alert cyclists to cars pulling out of driveways, parked cars which are about to open their doors or even alert the cyclists that a car is approaching from behind before they can even see them.

This information is relayed to the cyclist through an AR lens in their peripheral

vision that flashes certain colors to alert the cyclist of different dangers. The lens can also be pulled down in front of the user's eyes so they can obtain more detailed information about their surroundings such as maps, notifications and weather conditions. Optix is designed to be an aid in a cyclist's journey and is not made to be a replacement for traditional 'road sense' and aims to not distract the cyclist from what is happening directly in-front of them. This is why the AR lens is by default spring loaded into the peripheral mode.

Optix utilizes a compression zone mesh design that in the event of an accident the cyclist's skull decelerates slower than if they were wearing a traditional helmet potentially saving them from more serious head traumas.

The helmet is designed in such a way that even if the electronics were removed it would still function as a safe AS/NZS 2063:2008 standard helmet.



Supporting material



Algusta SJ5

A quick and effective way to stop bleeding from puncture wounds during combat for military personnel.



Mason
Leung



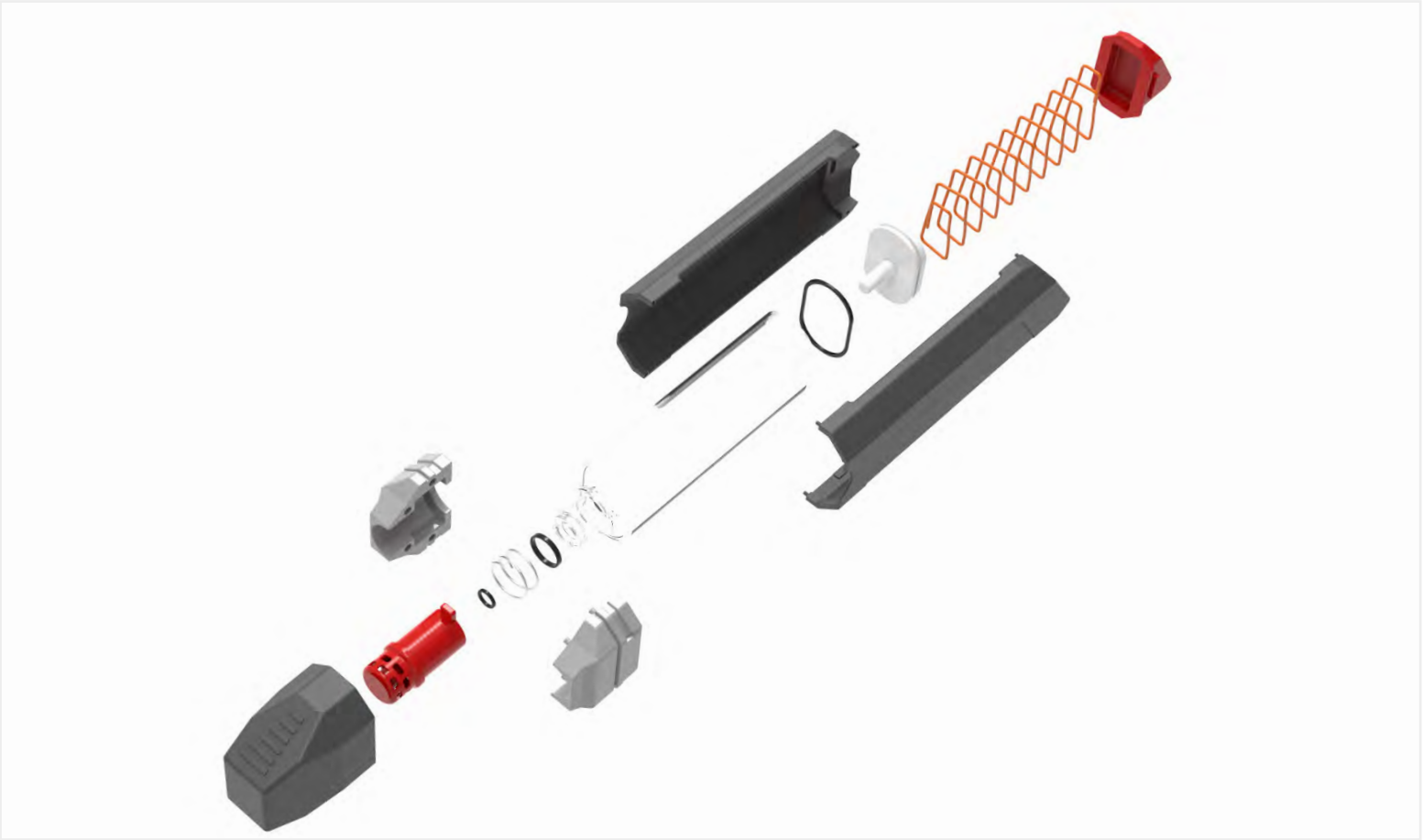


Algusta is a single use, lightweight, simple to operate injector device which aims to stop bleeding caused by bullets in any part of the body.

By utilizing the latest advanced injectable hydro gel technology, it is possible to stop massive bleeding in body parts where it is otherwise impossible due to limitation of current hemostat products. Another advantage of this material is its highly biocompatible nature which makes it much safer to use in close contact with living tissues.

Algusta works similarly to an “epi pen” but utilizes a biomaterial called hydro gel, which is capable of flowing into the wound and expanding in order to create a blockage to stop the bleeding. A canister of hydro gel can be released within 5 seconds and hardens in 15 seconds which means the whole process takes less than 30 seconds and increases the users survival rate.

The mechanical operation, size, durability, and ease of use make it easy to carry, find, and use in stressful situations.



Sense One

Sense One is a personal wellness device designed to diagnose and monitor common respiratory diseases at home and abroad. By incorporating bleeding edge technology developed at the University of Utah, the device requires a single breath to diagnose diseases. It is also able to monitor the user's condition throughout their sickness.

The project was inspired in response to the COVID-19 pandemic.



Nicholas
Fabian





The goal of Sense One is to provide a comfortable and holistic approach to testing for respiratory diseases. Technology included in the device allows users to confidently check their respiratory health, while removing many of the issues associated with existing tests such as PCR and RAT tests.

Sense One not only allows users to see if they are infected with a common respiratory virus early after infection, but

also to track the effect that the disease is having on their lung function, and warn them if their infection is worsening.

The technology is encased in an ABS casing that encourages proper usage with a screen that directs the user on how to use the device. The protective case is an EVA foam injection moulded case with a warm, soft fabric laminated to the exterior, as well as white zippers for a coherent aesthetic.



rumi.

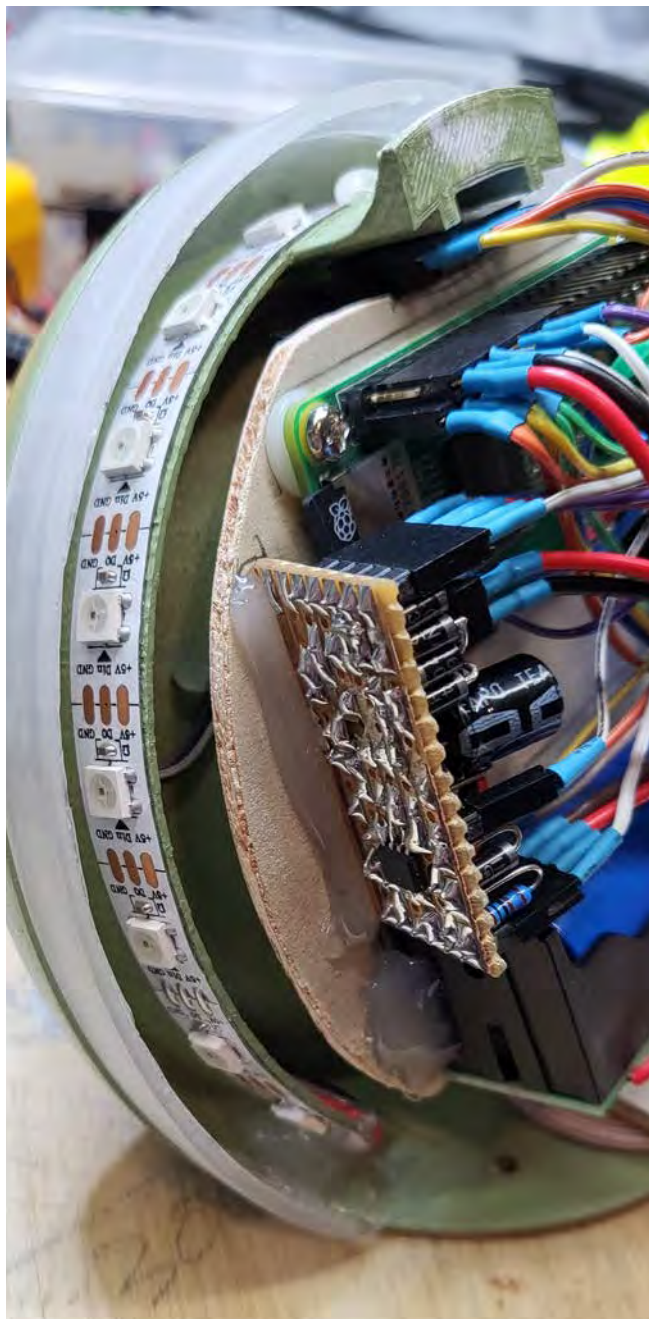
rumi. is a mindfulness health monitoring device for older adults. It uses a mindfulness activity based system to capture and communicate the physical and emotional side of care.

rumi. analyses and addresses the user's needs and state of wellbeing, to strengthen the bond and communication between older adults and their carers.



Parissa
Vaneris





rumi. is a product and system that improves the connection between older people and their family carers. It is a design that ensures that their needs are captured and communicated in a meaningful way.

The United Nations declared 2021 - 2031 the decade of healthy ageing. The World Health Organization has defined healthy ageing as "the process of developing and maintaining the functional ability that enables wellbeing in older age".

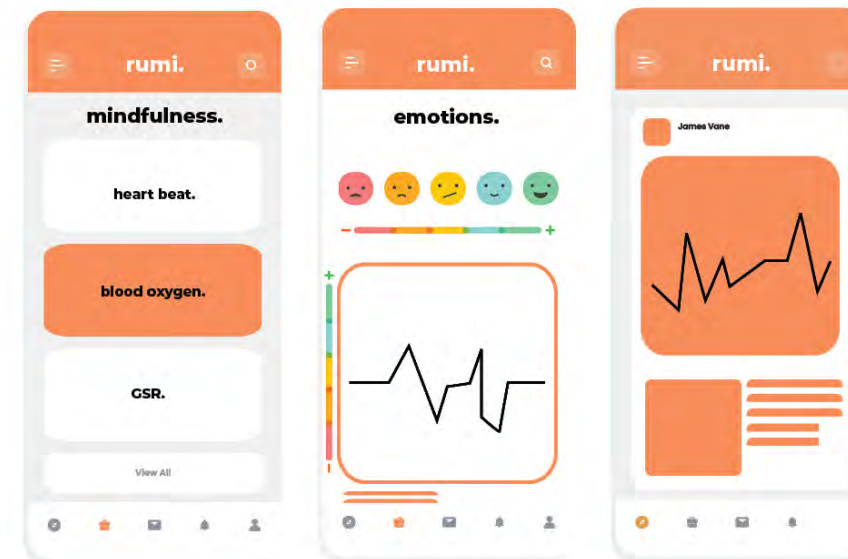
rumi. responds to this by focusing on the health and communication of care through three main functions:

First, rumi. will start by instructing the user to complete mindfulness activities to reduce stress, enhance calmness and limit the risk of depression and loneliness.

Secondly, rumi. collects biometric data through a series of sensors. A Heart Rate monitor, Pulse Oximeter and Galvanic Skin Response sensors will be used to record patterns in heart rate, record blood oxygen levels and measure sweat gland activities that are conducted through electrical properties in the skin.

Finally, this data will then be recorded and communicated to the user and carer through a mobile app system. It will display the health and emotional state of the user to help recognise when care is needed.

Overall, rumi. aims to prevent loneliness and isolation in a non-invasive environment for users and will ensure family carers are there when they are most needed.

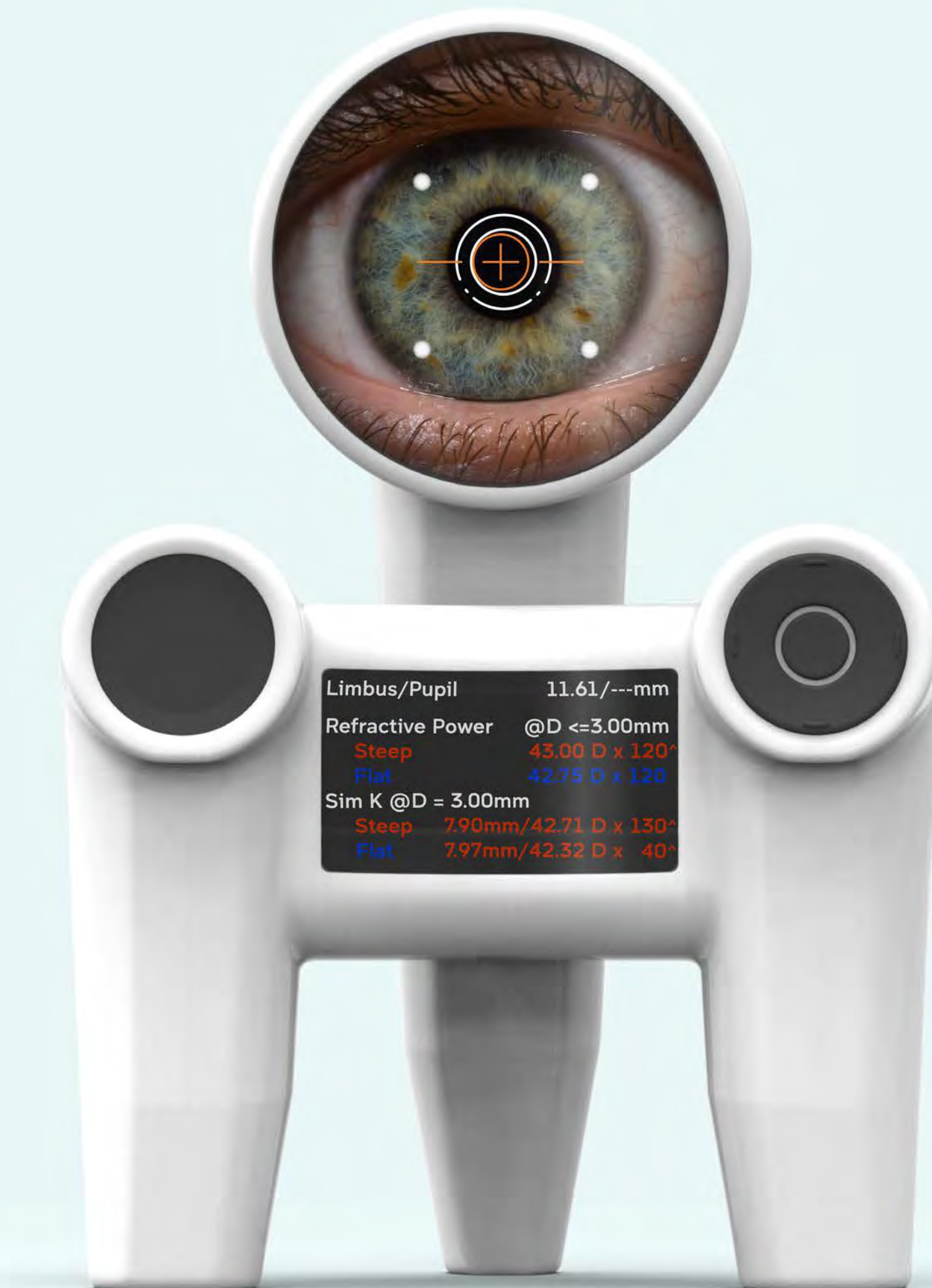


Scope Vision

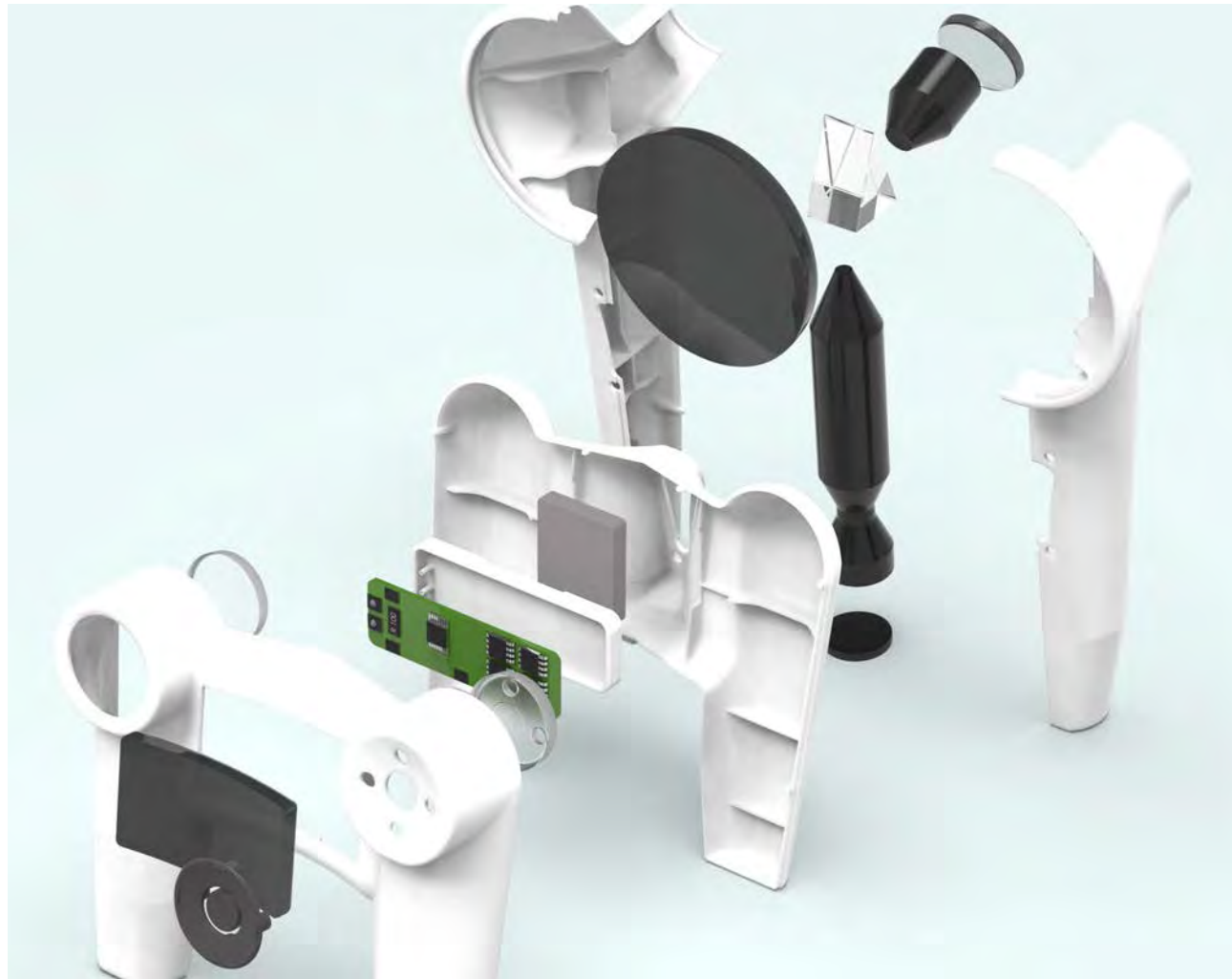
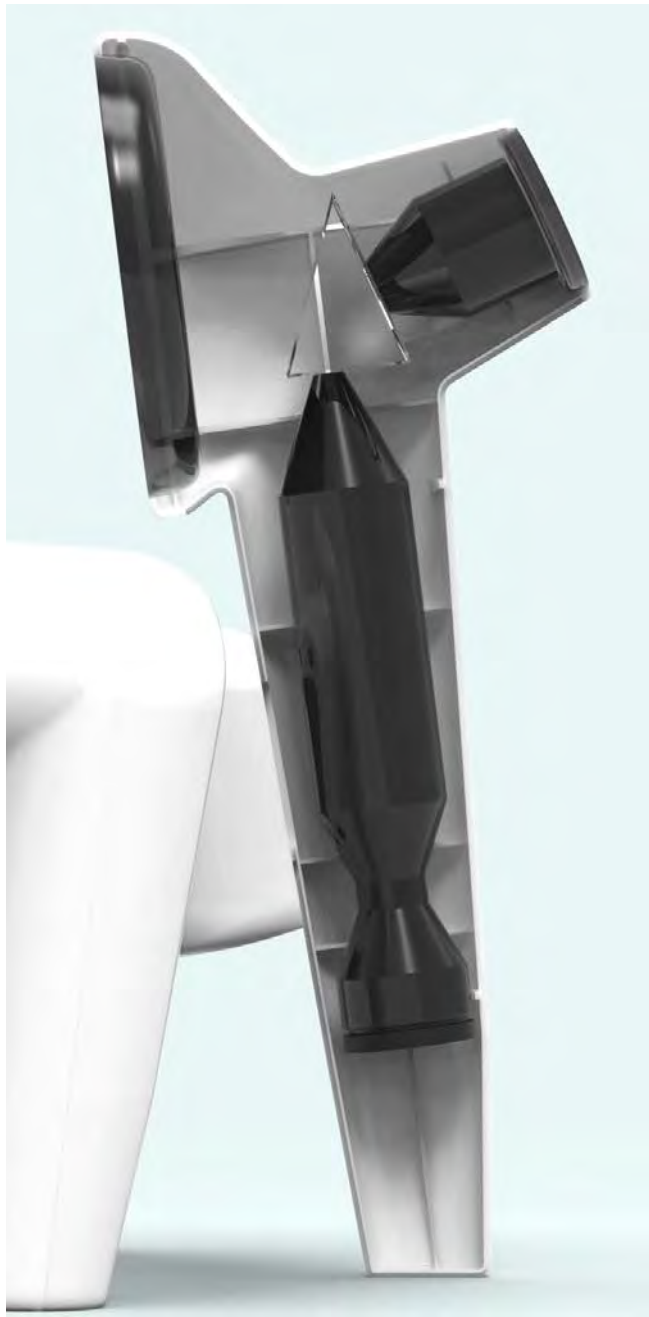
How might we design eye examination equipment for remote areas in low-income nations that is compact, accurate and affordable.



Randy
Smeros



Limbus/Pupil	11.61/---mm
Refractive Power	@D <=3.00mm
Steep	43.00 D x 120^
Flat	42.75 D x 120
Sim K @D = 3.00mm	
Steep	7.90mm/42.71 D x 130^
Flat	7.97mm/42.32 D x 40^



There is a critical shortage of optometrists in low-income nations. Sub-Saharan Africa averages just 2 optometrists for every one million people, where the developed world averages 156. To cope with demand, eye camps are set up in centralised locations to service as many people as possible. However, the often long wait times and great distances people must travel deters many as they cannot afford time away from work, so they remain untreated.

Due to the mobile nature of these eye camps, it is not possible to transport the equipment found in optometry clinics in developed countries. Another prohibitive factor for these low-income nations is the price of the equipment. Therefore, the current solution for

testing is carried out manually and is labor intensive, which contributes to the slow turnover of patients.

Scope Vision is an eye examination device that is targeted at speeding up the testing process. The automatic device does not require a specialist to operate it, and therefore frees up their valuable time so they can assess the more challenging cases. Scope vision produces objective results which are critical as the eye camps tour different regions and their patients often speak different languages. The compact handheld design of Scope Vision is achieved using a glass prism in conjunction with a tunable lens to create a periscope which simulates a greater distance to the sensor.





Meet IDES4112



AIDAN WHITBY

Hi! I love using design thinking to solve problems in innovative ways! I grew up on our family farm on the far South Coast of NSW and this is where I found my love for creating things. This has also created an interest in agricultural design.

 @whit.bydesign



CAROLINE LEIGH

Hi my name is Caroline Leigh, I'm an honors student in Industrial Design at UNSW. I believe good design is informed, empowering, and sustainable. My approach to design is founded in empathy towards people and the natural world. When I'm not designing, I enjoy reading, music, bush-walking, and photography.

 @caroline.designphoto.l

 carolineleigh007@gmail.com



CECILIA JUSUF

Cecilia is a designer driven by research and a thorough creative process. Ideation along the journey of choosing materials, forms and functions drives her to reach unconventional and interesting solutions for each of her projects. She has always been passionate about sustainability and human centered design. In her spare time Cecilia loves to spend time walking, listening to music extensively, going to cat cafes, and watching films.

 ceciliajusuf@gmail.com



DAMLA HATIPOĞLU

Hey I'm Damla! I'm completing my honours year of industrial design at UNSW. My interest areas include ethical, sustainable and inclusive design. I enjoy developing solutions by involving the human perspective in all steps of the problem-solving process. I'm intrigued by the ripples of change that can happen when the social element of design projects is considered.

 @dh.creations

 <https://www.behance.net/damlahatipoglu>



DORCAS CHU

Hi, my name is Dorcas. I am a curious and driven designer with a passion for medical design. I enjoy translating user research insights into product ideas that are meaningful, innovative and empowering. As an industrial design graduate, I am excited to take on the privilege and responsibility of making a positive impact on peoples' lives through creating well-designed products!

 @dorcascchudesign



HUGH JOHNSON

My name is Hugh Johnston. I am an enthusiastic young designer that thrives in a collaborative environment. I believe that designers are agents of change. Good design focuses on the relationship between objects and humans, and strikes the perfect balance between absence and presence so that our lives are not ruled by the products around us. Design for me should also incorporate a 'Less, but better' mindset, less impact on our planet and better for the users.



JIARUI YUE

I'm Jiarui Yue, you might also call me Jerry. I'm from China and I have spent 5 years at UNSW. I like beautiful and aesthetic things. I observe them, collect them, make them, share them and I will design them in future.

✉ geppp0605@gmail.com



KEITH PERRY

Hello! I'm Keith and I fell in love with design as it is a way for me to solve problems in practical and creative ways! I admire the work of others around me and I am constantly trying to learn new things. In my spare time I enjoy the outdoors through the means of camping, climbing, mountain biking and occasionally skiing.

📷 @kebope_

📄 <https://kebope.myportfolio.com/>



MASON LEUNG

Hello, I'm Mason! A quick back story about me, I'm always fascinated by outdoor culture hence most of my design were focusing on these types of things, within this category medical device is the one that interests me the most because there is so much more that can be improved.

📄 <https://holam19960723b3ab.myportfolio.com/>



NICHOLAS FABIAN

Hello! I'm Nicholas. I am a pragmatic designer that loves to be thoroughly involved with all parts of the design process. From sketching and sketch modeling, to final prototypes and production mock-ups, I have a good understanding of material, manufacturing and hand-crafting methods as well as CAD and technical documentation. Aside from design, I love to explore the outdoors in the form of gravity sports, biking and climbing.

📷 nfab.designs

✉ nickfab7@gmail.com



PARISSA VANERIS

Hello! My name is Paris and I'm a conscientious and thoughtful designer, deciding to pay close attention to subtle design cues that tend to display a sense of care and comfort in my work. At the same time, I am technically capable and can prototype from sketch models right through to production mock-up prototypes, as well as support that process with CAD documentation and graphic presentation skills.

✉ randy.smeros@gmail.com



RANDY SMEROS

Hey! I'm an artist with a background in construction. Industrial Design has been the ultimate marriage of my two worlds. I am a hands-on designer with a passion for fun quirky objects.

