

Amsterdam  
science & innovation  
Awards 2019

Showcase of ideas

# Contents

Introduction	4	Enzymatic process enabling synthesis of nitriles from alcohols, air and ammonia	38
Finalists Amsterdam Science & Innovation Award 2019	6	Fitsurance	39
Impact Award 2019	8	Support Teachers in Understanding the Social Dynamics in their Classes	40
		Linernote: Your Favorite Music Content in One Place	41
<b>Innovative ideas of the finalists</b>		BSAFE: Balance Smartly Assessed For Elderly	42
KRINO: an AI engine for causal inference and argumentation	10	SummarizeMe	43
Follow the money: Detecting crimes through new financial technologies	11	OVerzicht	44
3D embryo prints	12	Tourism facilitator (Toureas)	45
Non-invasive Ventilation Face Mask Optimization in Children	13	mijnDNAmedicatiepas.nl	46
Stabilized proteins for the Discovery of New Drugs	14	FanSea: Eco-friendly straws made out of seaweed (algae)	47
Circular phosphate economy: Pioneers in closing the phosphorus cycle	15	Infinite Art - Endless Science - Borderless Culture	48
		Plimbs (Plastic-LIMBS)	49
<b>Innovative ideas Amsterdam Science &amp; Innovation Award 2019</b>		Accelerating educational technology with a marketplace for exercises	50
Brave Hart - Hartmaatje	16	Don't wait till it's too late: Development of a web-based app to assess psychological needs and resources in healthcare professionals to facilitate prevention and targeted intervention design	51
Towards Continuous non-invasive glucose detection	17	Diving into sustainability	52
RabbitQuest	18	Strike-f(x) - The intelligent boxing bag	53
Queer Readings of the Hebrew Bible	19	MolTour with 3D and virtual reality: Touring through the world of molecules	54
Tackle the ICT teachers' shortage with the help of AI	20	Biodegradable and Compostable Nanoplastics	55
Mijn EPD	21	Caribbean Creativity: Diversity Film Screenings in the Netherlands	56
Public Watch	22	Vibey: a Virtual Collective Vibe Mind to Augment Performer-audience Interplay in Electronic Dance Music	57
Reciprocity Note	23	The use of VR for cognitive rehabilitation following stroke with Koji's Quest	58
Niluk - social network app to reduce loneliness among young adults	24	DisPLACE: Digital Disability Hub	59
Water Shield: Nature's biological adaptation to climate change	25	UCBOOKS.EDUCATION	60
Planet Circuli	26	DIAL: Digital Index of an Artwork's Life	61
The Blob	27		
The Running Chair	28		
Validation of microglia Histamine H4 receptor antagonism for the treatment of Parkinson's disease with a clinically ready drug	29	Partners & Sponsors	62
Simply quantum-dot barcode	30		
Chippeas, a healthy and sustainable snack innovation	31		
CLARITY NOW	32		
The Virtual Human Rights Lawyer	33		
CATO: The coach who never sleeps	34		
Ostomy-Appimize: Improving self-efficacy and self-confidence of ostomy patients by a clinical evaluated e-health intervention	35		
Improving drug discovery using human neurons	36		
ADappt: Personalizing diagnostic information in Alzheimer's disease	37		

## Introduction

We are proud to present you this booklet with a selection of the ideas that have been submitted for the Amsterdam Science & Innovation Award 2019. The quality of the ideas was very high and very diverse. In this booklet you can read about the innovative ideas and the researchers behind them.

The Amsterdam Science & Innovation Award is a yearly contest for the most innovative idea with a social and/or commercial impact arising from research. The award is open for researchers and students of all Amsterdam knowledge and research institutes. This resulted in a big variety of ideas, which we heartedly welcomed. We hope to welcome more institutes each year to join us in this program.

We are very happy with the jury of this year, a selection of professionals, all highly valued in their own field of work. They have the hard task to select the most innovative idea of 2019. The jury members are:

**Gigi Wang**, Chair of the jury – Director MG-Team, and Industry Fellow & Faculty - UC Berkeley Sutardja Center for Entrepreneurship & Technology

**Marja Zonneville**, General Manager Technology Portfolio at Shell

**Nina Tellegen**, CEO Amsterdam Economic Board

**Joris Tinbergen**, CEO Cleverbase

**Ton van Leeuwen**, Chairman department Biomedical Engineering and Physics – Amsterdam UMC

**Inge Oskam**, Lector Circulair Design and Business - Hogeschool van Amsterdam

**Jonathan Coutinho**, Neurologist Amsterdam UMC and winner of 2018

In the following pages you can find the finalists who will compete for this years Amsterdam Science & Innovation Award and the High potential Award and furthermore you will find a selection of all the innovative ideas that have been submitted.

### We hope to inspire you with these innovative ideas!

*The award is organized by Innovation Exchange Amsterdam (IXA) the valorisation centre of Amsterdam UMC, UvA, HvA and VU. Partners of the award are Gemeente Amsterdam, Sanquin, NKI-AvL, SURFsara, HealthInc, V.O. Patents & Trademarks, Kennedy van der Laan and UniQure.*

**IXA.AMSIA.NL**

## Program festive finale Amsterdam Science & Innovation Award

26 November 2019

### Finale & award ceremony

#### NEMO Science Museum

14:30 Doors open

15:00 Welcome and opening

15:15 Presenting the Impact Awards

- ▶ **Roeland van Geuns** | HvA
- ▶ **Jaap Bonjer** | Amsterdam UMC
- ▶ **Gijs Wuite en Erwin Peterman** | VU

15:30 Pitches of the finalists

- ▶ **Margo van Hartingsveld** | Ready for handwriting! Writing Readiness Inventory Tool In Context (WRITIC): assessment and group intervention
- ▶ **Jean Wagemans** | KRINO: an AI engine for causal inference and argumentation
- ▶ **Jill Coster van Voorhout** | Follow the money: Detecting crimes through new financial technologies
- ▶ **Bernadette de Bakker** | 3D embryo prints
- ▶ **Reinout Bem** | Non-invasive Ventilation Face Mask Optimization in Children: Personalized Medicine through 3D solutions
- ▶ **Imran Avci** | Leylek: A non-invasive device for embryo quality assessment in IVF treatment
- ▶ **Saskia Neubacher** | Stabilized Proteins for the Discovery of New Drugs
- ▶ **Marissa de Boer** | Circular phosphate economy: Pioneers in closing the phosphorus cycle
- ▶ **Alexander Kostenko** | Volumetric Lithography: Future of instant 3D printing

16:30 Intermezzo “Herman in een bakje geitenkwark”

17:15 Announcement of the winners of the Innovation Award

17:30 Drinks and bites

## Finalists Amsterdam Science & Innovation Award 2019

On Wednesday, 16 October the jury, chaired by Gigi Wang, selected the 9 finalists for the Amsterdam Science & Innovation Award 2019. The organisation received over 60 innovative ideas from the Amsterdam universities, universities of applied sciences, academic hospitals and research institutes. The jury had the difficult task to select nine finalists. The quality of the ideas was very high and very diverse.

### The nine finalists are:

#### Category Alpha/Gamma

##### **Margo van Hartingsveldt and Liesbeth de Vries | HvA**

Ready for handwriting! Writing Readiness Inventory Tool In Context (WRITIC): assessment and group intervention

##### **Federica Russo, Jean Wagemans and Federico Gobbo | UvA**

KRINO: an AI engine for causal inference and argumentation Oscar Franken | Vrije Universiteit Amsterdam

##### **Jill Coster van Voorhout | UvA**

*Follow the money: Detecting crimes through new financial technologies*

#### Category Life Sciences

##### **Bernadette de Bakker, Maurice van de Hoff, Roelof-Jan Oostra and Jaco Hagoort | Amsterdam UMC, location AMC**

3D embryo prints

##### **Reinout Bem, Gerrit Muller, Coen Dijkman and Dick Markhorst | Amsterdam UMC, location AMC**

Non-invasive Ventilation Face Mask Optimization in Children: Personalized Medicine through 3D solutions

##### **Imran Avci and Bob van Someren | VU**

Leylek: A non-invasive device for embryo quality assessment in IVF treatment

#### Category Life Sciences

##### **Saskia Neubacher, Sven Hennig and Tom Grossmann | VU**

Stabilized Proteins for the Discovery of New Drugs

##### **Chris Sloopweg, Marissa A. de Boer, Bas de Jong and Steven Beijer | UvA**

Circular phosphate economy: Pioneers in closing the phosphorus cycle

##### **Alexander Kostenko and Tim Wanamarta | VU**

Volumetric Lithography: Future of instant 3D printing



## Impact Award 2019

This year the Impact Award will be awarded for the second time to researchers who have realized an important contribution to society with their impressive innovations.

The Impact award is an award for the 'established' researchers, who have already acquired a track record in the field of valorisation. With this Impact Award, we would like to honor the researchers who have made a meaningful contribution to society, with their important innovations.

### Who is eligible for the award

To be eligible for the award the researcher has led or delivered a project or achievement with a large societal or economic impact. In addition, the research must have made a substantial innovative step and there must have been a successful collaboration with an external party, like a societal organisation or company. Another condition is that there has to be a link with one of the Amsterdam knowledge institutes who are participating in the Amsterdam Science & Innovation Award.

### The winners are:

**Jaap Bonjer** | Amsterdam UMC | Amsterdam Skills Center for Health Sciences

**Erwin Peterman & Gijs Wuite** | Vrije Universiteit Amsterdam | Physics and Life processes

**Roeland van Geuns** | University of Applied Science | Professor of Poverty Interventions

An honorable mention goes to **Willem Bouten**, Professor of Computational Geo-Ecology, of the University of Amsterdam for his innovation of lightweight GPS trackers for birds. These trackers and radar can predict bird density and large-scale bird mobility. This information is important for aviation and windmill farms. The innovation prevents collisions with birds and mass bird mortality. Bouten receives an honorable mention for his important contribution to the valorisation of ecological research. Bouten is a forerunner of e-Ecology, as valorisation can be challenging in this area of research.

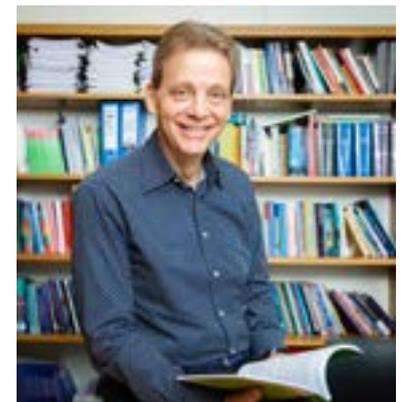
Jaap Bonjer, professor of surgery at Amsterdam UMC, receives the prize for the establishment of the Amsterdam Skills Center for Health Sciences (ASC). Because of this, the Netherlands has one of the most advanced surgical skills training centers in the world, with for instance 12 operating rooms and various laboratories. The ASC is a collaboration between Amsterdam UMC and the American company Stryker, which specializes in medical equipment. Jaap Bonjer deserves recognition for his vision on improving healthcare in the Netherlands and beyond. His ability to take initiatives and bring people of diverse disciplines from both inside and outside the organization together and thereby using his network and social involvement, were decisive for translating his idea into a real social impact. Because of him there is a place where methods can be trained and tested in a better and more efficient way and doctors can intensively practice surgical procedures, both surgical residents as surgeons who have to practice new methods. This has an impact in third-world countries as well, as there is a large shortage of trained personnel. Jaap Bonjer: "The fantastic collaboration between a team of passionate Amsterdam UMC staff and employees of Stryker forms the foundation of the success of the ASC."



Erwin Peterman, professor of Physics and Living Systems, and Gijs Wuite, professor of Physics and Life Processes, both work at the Vrije Universiteit van Amsterdam. They can map the smallest details of cellular processes by using their instruments such as the optical tweezers and fluorescence microscope. Peterman and Wuite succeeded in commercializing their high-quality equipment for fundamental research. This formed the foundation for the spin-off LUMICKS, which could call itself the market leader in high-tech measuring instruments for dynamic single-molecule analysis. The social and economic impact that is achieved because of these measuring instruments is enormous. The instruments enable research groups worldwide to gain a better understanding of how diseases develop and can be prevented. Peterman and Wuite deserve recognition for their vision, ideas and close collaboration with LUMICKS. They turn research into high-tech measuring instruments.



Roeland van Geuns, Professor of Poverty Interventions at the University of Applied Science (HvA), receives the Impact Award for his research on poverty and debt issues. Van Geuns has managed to make a difference to people who live from day to day. Debt issues is a broad social problem. Not only for people who, beyond their control, are in debt, but also for organizations, such as housing associations that have to deal with delays in rent payments. "The instruments Van Geuns has developed to manage debt positions and to make debt discussable have had an important social impact."



# Innovative ideas of the finalists

Finalist

## KRINO: an AI engine for causal inference and argumentation

Imagine a machine ingesting several hundreds of channels of spoken or written text in near-real-time, inferring causal and argumentative relations between the entities named in the text, letting you interact with it in natural language so you can check your assumptions.

This piece of AI would be a natural-language processing engine so powerful that it could serve as a “back-end” for a system of fact-checking and debunking fake news as fast as it is published, and it could function as a sophisticated tool for computer-assisted deliberation and decision-making in a wide variety of contexts. This machine is KRINO.



*Federica Russo, Jean Wagemans and Federico Gobbo (photo) are researchers at the University of Amsterdam*

## Follow the money: Detecting crimes through new financial technologies

Finalist

Our idea is to develop not only evidence-based data queries that run on bank data but also improved tools for transaction monitoring and open source investigations on financial flows, so as to detect and give insights into the underlying structure, networks, interactions and patterns of crimes that undermine the rule of law (“ondermijning”). Our focus is on the financial aspects of these crimes because criminals are often in it for the money. Also, financial evidence can help prosecutions of criminals who avoid other evidence against them.

As another reason; financial intelligence can help preventative strategies through inter alia disruption. As a final rationale, confiscated illegal proceeds can be turned into victim reparations. In other words, a focus on following the money can support a more holistic approach to these crimes. This holistic approach is commonly known by its 4P’s of Prevention, Prosecution, Protection of victims and Partnerships.



*Jill Coster van Voorhout is researcher at University of Amsterdam*

Finalist

## 3D embryo prints

During pregnancy the human body plan develops. Knowledge of normal human development is of great clinical interest, particularly for pediatricians and clinical geneticists. Unfortunately, (bio)medical students have to struggle with textbooks that use static, two-dimensional schematics to grasp the intricate three-dimensional morphogenesis of the developing human body. Physical 3D models of developing embryos are available but these are expensive, inaccurate and lacking in detail.

As Amsterdam UMC spin-off company we propose a webshop through which the customer can order specific stages of human development to be printed and include only the organ systems needed for their type of education. These individual models are scientifically up-to-date (de Bakker et al. Science, 2016), customized and tens to hundreds of euros cheaper than the outdated models currently used in (bio)medical education. Through better training of professionals and proper scientific research, we hope to reduce the incidence of congenital defects.



**Bernadette de Bakker** (photo), **Maurice van de Hoff**, **Roelof-Jan Oostra** and **Jaco Hagoort** are researchers at Amsterdam UMC, location AMC

Finalist

## Non-invasive Ventilation Face Mask Optimization in Children: Personalized Medicine through 3D solutions

Mechanical ventilation is a life-saving intervention in children with acute and chronic breathing disorders. Non-invasive ventilation (NIV) by a face mask has become a primary treatment for these children in both the hospital- and home-setting. The most important challenge in NIV is obtaining a face mask that has minimal air leakage and maximal patient comfort. Currently, a NIV mask adapted to the individual facial dimensions is a major unmet medical need.

We propose producing personalized NIV masks through novel, innovative 3D-scanning and -printing techniques to optimize NIV in children. Our team, a collaboration between pediatric critical care specialists/nurses and the technical innovation department of the AMC, is dedicated to develop personalized NIV masks in children. With the University of Twente we have produced first prototypes, further to be developed with aid of commercial 3D-print and medical ventilator companies. Together, we will successfully improve treatment for children with life-threatening breathing disorders.



**Reinout Bem**, **Gerrit Muller**, **Coen Dijkman** and **Dick Markhorst** are researchers at Amsterdam UMC, location AMC

Finalist

## Stabilized Proteins for the Discovery of New Drugs

The discovery of novel drugs is often hampered by a limited access to relevant target proteins which is caused by their intrinsic low stability. Our INCYPRO technology can provide stable therapeutic target proteins thereby facilitating their use in drug discovery. INCYPRO is an innovative technology uniquely combining organic chemistry and protein engineering and we have shown proof-of-concept of our idea. Our team is located at the VU University Amsterdam and has a long-standing experience in the design of protein-derived molecules with high chemical and biological stability.



*Saskia Neubacher, Alessia Amore, Jordy Saya, Sven Hennig and Tom Grossmann are researchers at Vrije Universiteit Amsterdam*

## Circular phosphate economy: Pioneers in closing the phosphorus cycle

Finalist

Our SusPhos process represents the first technology that can take phosphorus-containing waste material, such as struvite, as resource and upcycle it to high-quality products, like fertilizers and high-end flame-retardants, according to market specifications and at competitive prices. This will completely change the phosphate market that is currently still based on fossil resources, whilst also tackling the issue of uncontrolled algae growth caused by a surplus of phosphorus-containing waste in the environment.

The patented SusPhos process is low in energy consumption and CO2 emission and converts local sources of phosphorus from urban mines into marketable products, reducing transport costs and making phosphorus sourcing free from geopolitical pressure.

Therefore, the SusPhos technology offers recycled, economically attractive and high-quality products for a real market need.



*Chris Slootweg, Marissa A. de Boer, Bas de Jong and Steven Beijer are researchers at University of Amsterdam*

# Innovative ideas Amsterdam Science & Innovation Award 2019

## Brave Hart - Hartmaatje

The idea is based on the winning concept made by my dream team formed during the Dutch Hacking Health edition of 2019. Based on design thinking, patient journey mapping and patient histories which made us describing theoretically a new method for sustainable lifestyle changing measures for patients in cardiac rehabilitation.

'Hartmaatje' is a Best Human Centered design prize-winning concept from team Brave Hart at Dutch Hacking Health 2019. 'Hartmaatje' is a low-threshold concept for patients during and after completing cardiac rehabilitation in AmsterdamUMC (Cardiovitaal) and OLVG West/East and allows patients to start working on improving and sustaining a healthy lifestyle supported by people from their own network.

*Mandy Kreukniet, Yael de Man (Amsterdam UMC, location AMC) and Eline Heppe (Vrije Universiteit Amsterdam) are researchers*



## Towards continuous non-invasive glucose detection

In an ideal world we would make good decisions based on all the knowledge there is. But we don't live in an ideal world. The problem is not that there is no knowledge; the problem is that the knowledge does not reach the people. We can change this, as there are many young researchers that are eager to tell their story and want to have an impact on the public discussion. They just don't know where and how to convey their story.

We, three young scientists ourselves, will solve this problem through a platform where anyone can find a scientist by watching their 3-minute video. In a pilot project, we proved that this works: scientists are willing to invest time in making this video, and organizations are interested in these scientists. We are now ready to expand beyond this pilot project and help many more scientists to reach their audience.

*Elizabeth von Hauff, Benjamin van Enter and Nesha Narain are researchers at Vrije Universiteit Amsterdam.*



## RabbitQuest

RabbitQuest is an application focused on weight loss through healthy habit-formation.

With more than half of the people overweight in the Netherlands, the need to change is getting bigger and bigger every day. All over the world health applications are developed, the majority focus on short term improvement. However, we believe in a sustainable approach. Therefore RabbitQuest is going to develop an application focussed on habit-forming. We all know good and bad habits can improve or decrease the quality of your life.

RabbitQuest is started by students movement (Gijs Limborgh and Bart Spangenberg) science who believed that every human can change their health for the better.

RabbitQuest combines the best research on nutrition, movement, habit-forming and weight loss all in one app. The solution to losing weight once and for al.

*Gijs Limborgh and Bart Spangenberg are students Movements Sciences at Vrije Universiteit Amsterdam.*



## Queer Readings of the Hebrew Bible

Since the latter half of the twentieth century scholars have interpreted the narratives about the triangle relationship of David to King Saul and his son Jonathan in the Books of Samuel in a homoerotic way. Several sculptors and painters from the Early Renaissance to the present time identify with the pederast Goliath who is wounded by the sight of David's excellent beauty: for example, Donatello and Caravaggio. Such works produce impressively homoerotic interpretations already prior and parallel to the scholarly interpretations of the 20th and 21st century. In my dissertation I apply several ways of queer readings to selected passages of the Hebrew Bible, namely the legal texts concerning male homoeroticism (Leviticus 18:22 and 20:13) and cross-dressing (Deut 22:5), the creation accounts (Genesis 1 and 2), the stories of Ham and Noah (Genesis 9:20-25), Sodom (Genesis 19) and Gibeah (Judges 19), Saul, Goliath, David and Jonathan (Books of Samuel), as well as Ruth, Naomi and Boaz (Book of Ruth). Furthermore I analyze the homoerotic Jewish interpretations of Joseph, the beautiful young man in the Hebrew Bible: In Rabbinic Judaism, Joseph is described as an effeminate youth whose behaviour does not correspond to gender norms at that time. There is not only one queer method to read biblical passages, but a great variety of queer approaches that are grounded in certain interpretations of the term "queer". For example, the Song of Songs, Qohelet 4:9-12 and Ruth 1,16-17 can be interpreted today as queer, biblical counter-texts in relation to contemporary conservative ideas of marriage, which are still cemented through certain interpretations of the Genesis creation accounts, whereby queer is understood in a general sense as "against the dominant norm". A queer reading of King David's exposure while dancing during of the transport of the ark to Jerusalem in 2 Samuel 6 focusses on his erotic behaviour before G\*d which is extremely unusual, thus queer, for the readers back then and today and remembers that G\*d is on the side of persons like David. Queer interpretations of the Hebrew Bible contribute to the goal altogether of enabling more queer (gay, lesbian, bisexual, transgender, polyamorous etc.) ways of living today. Applying queer studies to biblical and Jewish studies and art history is an innovative endeavour which is necessary because of the long and partly ongoing homo- and transphobic traditions referring to biblical texts.

*Karin Hügel is researcher at the University of Amsterdam*



## Tackle the ICT teachers' shortage with the help of AI

A high percentage of Information and Communication Technology (ICT) teachers do not have the proper and latest computer science knowledge in order to teach the new curriculum. The new CS graduated students will not choose to become ICT teachers since they can have a more promising career in the private industry.

The proposed teaching methodology is project-based learning (PBL) method and is called the Robobo curriculum. It is based on a long-term educational project that is being developed in the university of Coruna. This curriculum applies AIED robotics as a teaching element and the students work in groups in order to solve a real-world robotics problem. The innovative advanced element that Robobo robots have is the level of interaction with humans that other similar platforms do not provide yet.

This proposal has a direct impact for Vrije Universiteit, since with this project we will give the opportunity to our university CS students to be part of AIED. Students who never thought of teaching before will help and assist high school students in AIED via robotics. Finally, conducting this research, we influence and trigger highschool students from low socioeconomic background to experience AIED robotics.

*Marina Milo is a teacher at Vrije Universiteit Amsterdam*



## Mijn EPD

Because of more strict privacy regulations, the national electronic patient file was abandoned in 2011. Unfortunately, until today the exchange of patient records is a troublesome entertainment, which leads to a lot of annoyance by medical doctors and patients. To solve this problem we created an application, so that patients can store and file their medical data themselves. This way the patient is in the lead and decides whether he wants to share his medical data. This will lead to a better exchange of medical information, with fewer delays in medical decision-making and a reduction in medical costs. By simply taking pictures of medical and lab results, as well as radiological images or even taking videos of CT scanning images, the medical data is safely stored and easy traceable when needed. In addition, pictures taken at home, of physical parameters, such as skin rashes or brushes, can be stored and easily filed or the next visit. This way the patient will not have to scroll through family pictures, to be able to share it with his medical doctor. A smart extended version will also help planning medical appointments and help reminding in taking medication. Therefore, this app will eventually lead to an improved medical information flow between patients and medical professionals.

*Sara-Joan Pinto-Sietsma (researcher, photo), Noel Bainathsah and Floor van Lieshout (students) at Amsterdam UMC, location AMC*



## Public Watch

Public Watch is building a cloud service aiming to support independent media and citizens to tackle political corruption and a tool to overcome the gap between voters and legislators in our political system.

*Rodrigo Alejandro Zapata Rojas and Javier Peña Roncero are students at the Vrije Universiteit Amsterdam*

## Reciprocity Note

The present society needed a sustainable economic policy in order to maintain the emotional and intellectual values of a district society for the collective survival of sustainable dreams of our future generation. There is an urge for the alternative idea in order to bring a collective solution for the emotional and intellectual deprivation in a so-called capitalised economic society. The “reciprocity notes” can be an alternative conceptual for a district society, that can boost the happiness of people through de-colonising an society. The idea can offer huge possibilities for the emotional and intellectual well-being of the members of a Free District Society with the support of Reciprocity Reserve Bank.

I prefer myself to introduce me as Binesh Girija-Balan; currently, I am doing my PhD at Social and Cultural Anthropology. I am graduated in MA Anthropology from University of Sussex (2018), Master in Business Administration from University of Kerala (2014), followed by my undergraduate in Development Economics from Kannur University (2012) in Kerala. In addition, I am dreaming of a society where the members has an equal opportunity for their emotional and intellectual sustainability, as a “natural reciprocity”.

*Binesh Balan is a researcher at Vrije Universiteit Amsterdam*



## Niluk - social network app to reduce loneliness among young adults

Niluk - social network app to reduce loneliness and social exclusion by facilitating meaningful social offline contact in small and personal every-day activities, posted by people like you and me and other social initiatives.

We track social impact with AI to gain more insight into the problem and to suggest better remedies and real life interventions to science and the government, for a healthier life for us all.

Founder: Elena Köstler, Cognitive Neuropsychologist, Robin Roosdorp (Growth Hacking, Branding), Sarah van der Ree (UX/UI Design), Roel Cuijjs (Copywriting), Tunga.io (4 developers & Project manager).

**Elena Köstler, Robin Roosdorp and Roel Cuijjs**  
are associated with demonstrator Lab at Vrije Universiteit Amsterdam

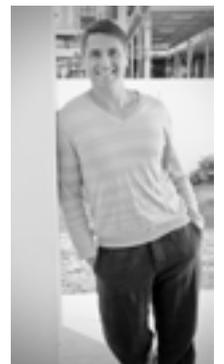


## Water Shield: Nature's biological adaptation to climate change – water and sub-molecular medicine solutions

Netherlands canals are murky, and growing with toxic algae generating a health hazard and costly endeavor to cleaning. Additionally, storm wave surges threaten NL's safety and security. The project uses nature's biosystems to enable environmental changes to Climate Change and the development of biological adaptation using sub-molecular medicine development. Using oysters housed within a modified filtration and stimulation system powered by the sun, these natural sewerage treatment plants eat up algae and clear up the water.

The byproduct of the water and oysters is to be used in the development of sub-molecular medicine. Additionally, the breeding ground for the oysters is to serve as wave storm barriers fitted in between offshore wind turbines. The applicant is a doctoral scholar contracted by the governments of South Africa and NL to develop solutions that are knowledge disruptive and in align with national strategies.

**James Lech** is a researcher at Vrije Universiteit Amsterdam



## Planet Circuli

The debat is over, climate change is real. Still not everybody sees the problems that are coming with it. Mainly because the effects of climate change are not visible in one lifetime. Teachers are occupied with many other important issues and they can't keep up with the fast developments in sustainability.

Planet Circuli is an educative serious game about the Sustainable Development Goals for pupils, played as a workshop in the classroom led by a professional Game Master. In the resource-management boardgame the resources are finite, just like on Earth. During the game the players have to make responsible use of resources to build a community on the planet Circuli. The game-session is designed according to the learning principles of Constructivism and Phenomenology, linked to several Core Intended Learning Outcomes set by the Dutch Ministry of Education, Culture & Science.

My name is Robbie van Dijk and last summer I graduated from Product Design at the University of Applied Sciences Amsterdam (HvA), with Planet Circuli as my final project. Although I wasn't a typical "good" student, I always enjoyed learning. I want to show that learning can be fun and I want to help to create a better future.

Planet Circuli is product for businesses that provide workshops (about the Sustainable Development Goals). The product is designed to be easily upgraded and adapted to different theme's or Intended Learning Outcomes by adding Expansion Packs. The workshop business can offer various workshops with the same product. Teachers can now book a fully organized learning experience for their pupils that always be up to date. It gives the children a change to experiment and play with the lesson content.



**Robbie van Dijk** is a student at University of Amsterdam

## The Blob

More and more people want to be able to eat less meat. But only few alternatives exist today and they are often expensive. The aim of this project is to exploit a new resources : the slime mold.

My name is Théo Dokhelar, I'm 22 and I discovered this organism during my Ecology Master Degree in France.

The aim of this project is to create ecological and ethical alternative food to meat by cultivating slime mold.

**Théo Dokhelar** is a student at Vrije Universiteit Amsterdam



## The Running Chair

With The Running Chair we want to create a device which reduces the number of people needed in order for patients to start exercising. It is our goal to develop a self-propelled platform that fits a chair on top of it. When going on a walk, this platform drives behind the patient and his/her therapist, which reduces the need for an extra staff member or person to carry the chair with them. The self-propelled platform reduces the labor force and number of staff needed before patients can start their daily walk. The platform also provides safety during treatment of the patient. We want to produce, test and deploy a self-driving device/platform in the AmsterdamUMC. The product will be designed through combining existing technologies such as the use of sensors and software together with a flat device that can fit a chair on top in a safe and secure way.

*Feike Lammert van Weperen is a researcher at Amsterdam UMC*



## Validation of microglia Histamine H4 receptor antagonism for the treatment of Parkinson's disease with a clinically ready drug

We propose that microglia may play a crucial role in the Parkinson's disease (PD), and that the microglia activity is regulated by the histamine 4 receptor (H4R). In our previous study, we found that mRNA expression of H4R was upregulated in PD patients. In a recent follow-up study, we provided evidence that this was indeed a mechanism involved in the progression of the PD process. We thus provide support for the efficacy of two clinical ready H4R antagonists' strategies in the treatment of PD pathology to reduce potential damaging effects of neuro-inflammation and ameliorate the motor symptoms.

This award will support us to apply the Eurostars funding by which will result in a unique collaboration between world leading researchers and industry. Because of their involvement, we will be able to investigate the importance of clinical trials to test H4R antagonists for Parkinson's disease

*Ling Shan is a postdoc at the Netherlands Institute for Neuroscience*

## Simply quantum-dot barcode

Various communities have suffered from pirated goods, counterfeit, fraud, forgeries, fake identification, etc. Our idea launches a solution from conventional quantum dots, simple fabrication method, complexity from the pattern information, friendly inspection, and low-cost facility.

This all-in-one package builds up the higher security protection respective to known technologies. Hope to secure the physical and intellectual losses to prevent the side effect from social issues. We are looking for partnerships from museums, banks, government, aircraft-related companies, and security label companies.

Chia-Ching (PhD) and Menno (master student) are doing single-dot spectroscopic researches on semiconductor quantum dots at Amsterdam Science Park in UvA.

*Chia-Ching Huang and Menno Demmenie  
are students at University of Amsterdam*



## Chippeas, a healthy and sustainable snack innovation

Normally the chickpea liquid only has as a practical function and 99,99% is seen as waste and thrown away. But with a small amount of additives it can be turned in a healthy and flavourful snack.

Nowadays the chickpea liquid (Aquafaba) is washed down the drain when the can is strained, a waste because it has a lot of potential. On the internet examples can be found of aquafaba used as meringue in vegan desserts but transformed into chips is new. In addition to the fact it is really sustainable, it is really tasty and healthy as well, especially because it can be topped with every flavour you want (rosemary sea salt, smoked paprika, Indian curry, dried mushroom, etc).

This product can make a huge difference: a portion of 100 grams Chippeas contains only 87 kcal versus 550 kcal in regular chips. It is well known high kcal products are an important driver behind obesity numbers in urban environments.

*Lars Vierbergen, Guus Nelissen & Sofie Glastra are teachers at  
Amsterdam University of Applied Sciences*

## CLARITY NOW

Refugees who seek asylum in the Netherlands have to go through multiple interviews. These interviews are not recorded. The only proof of the interaction is the written summary made by the immigration officers. Given the central role of asylum claimants' statements, it is of crucial importance that interviews with asylum seekers are conducted in a profound, patient and objective manner. Special attention must be paid to the vulnerable situation in which most asylum applicants find themselves when being interviewed by immigration officers.

Clarity Now wants to create a tool that can be used by asylum applicants to help and support them during this procedure. It will not only record the interactions but will also provide certain safeguards where the government has expressed concerns. Furthermore, it will also provide lawyers with a transcript of the interview which will assist them during the examining phase after the interview. Our tool will ensure that the procedure is conducted in a fair and transparent manner and that parties are on a more equal footing with one another as well as safeguarding the rights of all parties involved.

Clarity Now is currently focused on the asylum procedure. However, our tool has the potential to be used in a wide range of interactions between the government and individuals.

I am Emma Morgan, founder of Clarity Now. I am currently enrolled in the Master International Law at the University of Amsterdam and I work together with Nienke Doornbos (Researcher at the UvA) and the LawHub.



*Emma Morgan and Nienke Doornbos are researchers at University of Amsterdam*

## The Virtual Human Rights Lawyer

Throughout the world, serious human rights violations occur and go unpunished. Victims lack the resources and expertise to hire lawyers to fight for justice. The Virtual Human Rights Lawyer (VHRL) optimally engages technology to improve victims' access to international human rights mechanisms.

Translating legal logic into a knowledge system will form the basis for a scalable chatbot with global reach and impact. This chatbot will make scattered and complex legal information more accessible in an interactive knowledge tool that replicates the client-attorney conversation in formal coded language – thereby lowering the threshold to access an international institution and bridging the knowledge gap, both for victims and those who try to support them.

Our research team consists of human rights experts, lawyers, computer scientists, criminologists and entrepreneurs, jointly developing technology with societal impact for those that need it the most, and a business plan to scale and implement the VHRL worldwide.

*Marieke de Hoon, Gabriella Gricius, Bethany Houghton, Jasmijn de Zeeuw, dr. Victor de Boer, dr. mr. Charlotte Gerritsen, Floris den Hengst are researchers at Vrije Universiteit Amsterdam*

## CATO: The coach who never sleeps

While physical recovery strategies have become well-used in sport, research shows that for many athletes knowledge about psychological recovery is inadequate. Hence, the idea is to develop a chatbot app, named CATO, that supports athletes in their psychological recovery after training/competition.

CATO stands for Chatbot-Assisted Thriving Optimization and is 24/7 available. By optimizing the psychological recovery process, CATO contributes to improving sports performance in a healthy way. This idea is the result of my work as a sport psychology researcher at the UvA.

The personal coaching of CATO is a necessary next step in promoting the balance between effort or stress and recovery by supporting recovery self-regulation, tailored to the individual user. CATO also has the potential to be of value for other professional groups who would benefit from optimal psychological recovery, such as performing arts, police, health care and the military.

*Yannick Balk is researcher at University of Amsterdam*



## “Ostomy-Appoptimize”: Improving self-efficacy and self-confidence of ostomy patients by a clinical evaluated e-health intervention.

An ostomy might have negative impact on the daily functioning, resulting in reduced quality of life. Especially in the first period after the operation, patients have to adapt to the new situation. Insecurities can lead to psychosocial problems. Patient education and guidance might be of a crucial importance. To improve the care for ostomy patients e-health innovations seems hopeful.

In this project, a medical personalised app will be developed specifically for ostomy patients, aiming to increase the self-confidence and self-efficacy of patients. Development of the app will be fully based on the experience of ostomy patients.

### Team

Sebastiaan van der Storm is a Phd-candidate at AMC. His focus is on e-Health innovation in the perioperative care. In addition to his research he is a medical advisor at everywhereIM where he is involved in the development of medical applications.

Next to her profession as a gastro-Intestinal surgeon at AMC, M.P. Schijven is professor e-health, chair on Simulation, Serious Gaming and Applied Mobile Health-care and Chair Steering Board e-health Amsterdam UMC.



*Sebastiaan van der Storm, prof. M.P. Schijven and prof. W.A. Bemelman are researchers at Amsterdam UMC location AMC*

## Improving drug discovery using human neurons.

Brain disorders, like dementia, epilepsy or psychiatric disorders present a staggering health-care burden, costing 20 billion euros per year. Currently, for most disorders no cure or treatment is available. There is a urgent need for new treatments, but 9 out of 10 clinical trials fail. Most research on drug candidates is performed on simple cell models that do not mimic the complexity of the human brain.

We, a team of neuroscientists, offer a novel, human-based screening assay for neurological drug candidates using patient-derived neurons. These human neurons make functional networks in a culture dish, similar to the situation in the living brain.

Our expertise in growing human neurons in a scalable system and in measuring complex functioning of live neurons, provide the ideal combination to develop a commercial human screening assay for drug candidates. This assay will significantly increase the success of drug development, providing new solutions for brain disorders.

*Claudia Persoon, Prof. Matthijs Verhage and Dr. Ruud Toonen are researchers at Vrije Universiteit Amsterdam*

## ADappt: Personalizing diagnostic information in Alzheimer's disease

### **Problem**

A growing proportion of individuals referred to memory clinics is labelled with mild cognitive impairment. In the course of three years, roughly half of these patients develop dementia. Alzheimer's disease (AD) biomarkers allow a more precise estimate of this risk, which enables patients/caregivers to better prepare for the future. However, interpreting and communicating biomarkers results is complex.

### **Solution**

We developed ADappt, a prototype web-application for clinicians, aimed at supporting shared decision-making in the diagnostic work-up, and facilitating the calculation and communication of individually-tailored risk estimates of the progression to dementia. Our aim is to further develop this first-of-its-kind tool for real-life use.

### **Project team**

Leonie Visser (post-doc, specialized in medical communication), Ingrid van Maurik (PhD-student, specialized in risk-modelling), and Wiesje van der Flier (head of clinical research Alzheimer center Amsterdam).

### **Benefit for the organization**

ADappt greatly contributes to personalized diagnostic care in (early-stage) AD and harmonization of clinical practice.



*Leonie Visser, Ingrid van Maurik and Wiesje van der Flier are researchers at Amsterdam UMC, location AMC*

## Enzymatic process enabling synthesis of nitriles from alcohols, air and ammonia

The researchers from HIMS Biocat have serendipitously discovered the unprecedented ability of copper-dependent alcohol oxidase from *Fusarium* species to transform aldehydes directly to nitriles in presence of ammonia and molecular oxygen supplemented in form of air. Furthermore, they have utilized this catalytic promiscuity and developed the one-pot two-step bio-catalytic process affording nitriles from alcohols, molecular oxygen and ammonia.

The bio-catalytic process is particularly valuable, since it offers elevated atom-economy and proceeds under milder reaction conditions compared to the traditional synthetic methodologies. As far as the applicability is concerned, there is growing amount nitrile-containing pharmaceuticals available on the market, therefore, the process could be utilized for rapid and selective installation of nitrile moiety into the target compounds as well as for elegant synthesis of nitrile-containing building blocks.

*Jan Vilim, Dr. Tanja Knaus and Dr. Francesco G. Mutti  
are researchers at University of Amsterdam*



## Fitsurance

Currently 58% of the Dutch population suffers from chronic diseases. A lot of disease occurrence is due to physical inactivity and poor dietary choices. A solution to battle diseases that come as a result of lifestyle is to make lifestyle adaptations. Our society, however, is constructed in such a way that it's hard to adopt a healthy lifestyle. The most easy choice is commonly the most unhealthy one.

We are Fitsurance, a team of psychologists, behavioural and human movement scientists with a mission to create a lifestyle program that guides people towards a healthy lifestyle and thereby becoming more healthy. We offer a customized multicomponent lifestyle intervention consisting of physical health assessments, dietary and exercise consult as well as psychological guidance to help individuals to attain a healthy lifestyle. We also apply our intervention in corporate settings which results in a higher work productivity and less absenteeism.

*Sauvik Das Gupta, Tommie Koppens and Stef Beijl  
are students at Vrije Universiteit Amsterdam*



## Support Teachers in Understanding the Social Dynamics in their Classes

Having a good insight into the group dynamics of a school class is an important catalyser for the learning progress of the children and the effectiveness of interventions by the teacher. The online school class analysis platform developed in the proposed project will provide an easy to use tool for teachers to deepen/cross-validate their understanding of the underlying group dynamic of a school class.

The envisioned online platform is based on the recently developed Kemeny decomposition algorithm, that allows to dynamically decompose (social) networks into natural clusters and find the key players inside each cluster. The algorithm builds on a probabilistic interpretation of human interactions and has been successfully applied in several academic and practical applications.

***Joost Berkhout and prof. dr. Bernd Heidergott** are researchers at Vrije Universiteit Amsterdam*



## Linernote: Your Favorite Music Content in One Place

Identity on the Web is a hard problem, and has a severe impact among music consumers and music industry. We propose to generate a novel cross-platform database of links using Knowledge Graph technology that we call Linernote. We propose to use it to integrate all identities of music artists on the Web, and combine them under a unique app of integrated music content. We offer expertise in AI, databases and data integration to introduce Linernote to the market.

***Albert Meroño Peñuela** is a researcher at Vrije Universiteit Amsterdam*



## BSAFE: Balance Smartly Assessed For Elderly

In our aging society fall incidents are the leading cause of disablement or death. Risk of falling is not a disease in itself but hidden behind a large number of probable causes and circumstances. Which means it's difficult for healthcare professionals to detect a high risk of falling. Consequence is that only very few people profit from fall prevention programs, which are in themselves effective. BSAFE is a smartphone app that is able to indicate high risk of falling and, moreover, bringing it to the home of the patient. This will help healthcare professionals to recognize older seniors at high risk of falling and take preventive measures. BSAFE will be combined in existing effective and successful healthcare apps to maximize the effect on the international aging community.

**Edwin Geleijn, Prof. Dr. Ir. Jaap Harlaar, Prof. Dr. Mirjam Pijnappels, Jesse Aarden, MSc and Dr Carel Meskers**  
*are researchers at Amsterdam UMC - location VUmc*



## SummarizeMe

Today's students need to be skilled at learning a large amount of information. One of the greatest things to learn is to become more adept at determining what is important, and following, structuring information so it is easier for the brain to give meaning to or apply it.

SummarizeMe is a tool to become more efficient in processing information. By optimizing the information in smaller chunks, it will be easier to study. Because by saving time we can all spend more time where it matters, studying the content.

I am Dante, currently a student, and I believe that SummarizeMe would be great to introduce to students. If time can be saved on the tedious task of writing a summary, by helping speed this up, time will be saved that students can use to learn what matters.

**Dante Bastiaan Göbbels** *is a student at University of Amsterdam*



## OVERzicht

Public transport plays a significant role in the Netherlands, especially in the Randstad. With OVERzicht, we aim to create a platform that can be used by cities and municipalities to not only analyse their public transport network, but also improve them. We do this by combining existing data of these networks and other data sources such as weather and traffic, as these two factors play a big role in the punctuality of public transport. Additionally, we eventually want to incorporate simulation features in our product, allowing cities to simulate various situations and routes.

As students of the Bachelor of Computer Science programme at the UvA, we got to experiment with this idea during the Project Software Engineering course last June. Although the course lasted only four weeks, which was not long enough to gather enough data to make real predictions, we got a taste for it and would like to continue working on our idea.

*Renée van Eck, Florine de Geus and Emil van Veen  
are students at University of Amsterdam*

## Tourism facilitator (Toureas)

Nowadays, traveling is identified as a popular leisure activity. In this regard, on the one hand, finding the most preferable options of accommodation, transportation, sightseeing, food, etc., and on the other hand, having a vision on financial costs remains concerning issues contributing to the travelers' satisfaction.

In fact, satisfaction with traveling experiences can result in favorable behavioral intentions, such as saying positive things, recommending to others, and returning to the destination. Both travelers and local/national commercials would take benefit from this situation. This is an important implication especially for the countries on which their economy is based.

Since, it is time-consuming to check all of above-mentioned traveling items separately, providing suggestions from each category simultaneously with regard to a defined price seems highly demanded to facilitate the traveling process. People would like to be able to choose each item based on their affordable budget and personal preferences in each step of traveling. So, our application will be able to facilitate these processes in the best possible manner.

*Ali Ziaee and Saeid Mehralizadeh are researchers  
at Vrije Universiteit Amsterdam*



## mijnDNAmedicatiepas.nl

Currently approximately 130 gene-drug recommendations are available in the Netherlands. One out of every twenty new drug prescriptions would be altered, if personal DNA variants are known. Nowadays, physicians and pharmacists are seldom aware of the patient's DNA variants. We will use available personal DNA data to improve drug treatment by avoiding side effects and non-efficacy.

Many patients have their DNA sequenced and analysed for clinical as well as scientific purposes. In this project we have selected 200 relevant DNA variants, that predict clinical effects of drugs in individual patients. For every sequenced patient we extract these DNA variants, encode them in a QR-code and print them on a plastic card: the DNAmedicatiepas. Scanning this QR-code with a mobile device connects the user to an online database that will present the latest personal pharmacogenetic drug recommendations.

We reuse DNA to empower patients and boost personalized medicine in medical practice.

***Pierre Bet, Tessel Rigter, Martina Cornel and Daoud Sie**  
are researchers at Amsterdam UMC, location VUmc*



## FanSea | Eco-friendly straws made out of seaweed (algae)

We create sea-own alternatives to plastic disposables for the hospitality branche, made of a bioplastic out of the algae of seaweed, beginning with a FanSea Straw. It's innovation lies in a new resource for plastic: seaweed. Seaweed cultivation doesn't harm the environment, and doesn't need fertilisers or land. When the product decomposes, it gives nature back what it has given us: minerals and water.

***Jasper Luijendijk, Michelle Nierop and Vera van Laarhoven**  
are researchers at University of Amsterdam*

## Infinite Art - Endless Science - Borderless Culture

How to present information in a way that is engaging and playful, that teaches the user without her or him being aware?

We designed a hardware system that uses beamers and gestures to give access to information and that lets the user play with information as if he was a director of a great orchestra.

To do this we use the revolutionary Metabotnik Software, created by Etienne Posthumus and Paul Dijstelberge. The internet version of this program can be used by anyone - including you - at Metabotnik.com.

We now want to bring our Metabotnik in an even more sophisticated form to the institutions: to schools, universities, museums, anywhere. To create and enjoy.

***Paul Dijstelberge, Diederick van der Lee (University of Amsterdam)  
and Dr Ivo van Vulpen (Nikhef)***



## Plimbs (Plastic-LIMBS)

Plastic waste is a growing problem in the world. The environment, animals and we ourselves are harmed by all the plastic that ends up in and outside of landfills. Scientists worldwide try to find solutions for this plastic. So why is it that we, as scientists, the ones who believe the most in the idea of reducing plastics, are part of the problem. Labs were responsible for roughly 5.5 million tons of waste in 2014 alone.

With PLimb we want to create awareness of the growing plastic waste problem in academia and especially life sciences laboratories. On top of that we want to recycle and reuse these plastic by innovatively upcycling plastic into prosthetics through a melting and moulting process.

With PLimb we want to introduce a new and better future for plastic lab waste.

***Paris Asif, Max van de Laar and Enzo Schmitz  
are researchers at Amsterdam UMC***



## Accelerating educational technology with a marketplace for exercises

Ever wondered why so many learning apps, for instance in primary education, feature such simple exercises and silly multiple choice formats? It's because exercise development requires item construction expertise, domain expertise, and lots of time and money.

Therefore, our centralized item bank connects item developers with edtech companies. Item developers directly sell their specialized item sets on a subscription or pay-per-use basis, while edtech companies buy high quality exercises for a fraction of the development costs. A win for the item developers, a win for the medtech companies, and definitely a win for the great many users of learning apps.

*Alexander Savi is a researcher at Vrije Universiteit Amsterdam*

## Don't wait 'til it's too late: Development of a web-based application to assess psychological needs and resources in healthcare professionals to facilitate prevention and targeted intervention design – a positive psychology approach to combat burnout

Stress is omnipresent in healthcare causing a dramatic increase in burnout among healthcare professionals. Burnout (i.e., feeling exhausted, dissociated and less efficient) has severe consequences for the well-being and careers of healthcare professionals but goes beyond that by posing a threat to patient care and safety. In order to combat burnout and warrant patient safety, powerful interventions are needed that equip healthcare professionals with the resources needed to cope with the stressful demands they face.

However, healthcare organisations struggle with the complexity of the problem and a sea of opportunities when it comes to the assessment of needs and resources, and the implementation and evaluation of health promotion interventions. Here we introduce a web-based application that provides a user-friendly and simple assessment of work and personal characteristics that are crucial for the prevention of burnout in healthcare professionals, ultimately leading to tailored interventions that can empower healthcare professionals to effectively combat burnout.

*Lara Solms is researcher at University of Amsterdam*



## Diving into sustainability

Nowadays many people would like to adopt a more sustainable lifestyle, however changing existing behaviour can be difficult. By leveraging the strengths of VR technology and the latest insights from the fields of communications, social psychology, and sustainability research, we aim to develop a novel VR-based application that helps people to make more sustainable choices in life.

Our idea consists of an evidence-based virtual reality (VR) application. The application is designed to educate users in an interactive and engaging way about one of today's largest ecological problems: marine plastic pollution.

By taking a novel yet evidence-based approach, we hope to develop an application that does not only inform people about the adverse effects of plastic pollution (which is undoubtedly an important first step), but also offers practical skills that will help them make more sustainable choices in the future.

**Zeph van Berlo, Hande Sungur** (University of Amsterdam), **Tilo Hartmann, Guido van Koningsbruggen** (Vrije Universiteit Amsterdam)

## Strike-f(x) – The intelligent boxing bag

Boxing bags are ubiquitous across combat sports, health, fitness and physical activity spaces. However, the key problem with current boxing bags is that the users don't have any indication of their performance or progress. This feedback is crucial for optimizing learning, training more efficiently, preventing injuries and supporting enjoyment and motivation. The Strike-f(x) boxing bag gives you everything you need to know about your boxing-bag performance and gamifies your workout to stimulate progression, enjoyment and longer-term engagement.

It has been created on the Human Movement Science department at the VU, by members of the Amsterdam Combat Lab. The bag can be used by martial art schools fitness gyms and elite sportcenters to boost the experience of every boxing-bag workout.

**Nilas van Woersem and Tim van der Vaart** are students at Vrije Universiteit Amsterdam



## MolTour with 3D and virtual reality: Touring through the world of molecules

Three-dimensional reasoning is of critical importance in all areas of chemistry and biochemistry. At the university, we see that the 3D-reasoning skills of the average student is insufficient to match the level required in future industrial or academic positions. Research has indicated that limited spatial-reasoning skills lead to chemical misconceptions. Currently, there is nothing on the market that addresses this issue. The classical molecule-building kits are insightful but are outdated and have a number of limitations. Project MolTour was initiated to research and develop a novel learning tool to mitigate this shortcoming.

We designed a “lab version” that brings 3D, augmented (AR) and virtual reality (VR) representations of biomacromolecules (e.g., proteins; DNA) and small molecules (e.g., drugs) to the classroom. MolTour runs on mobile phones and provides VR capabilities through low-cost Google Cardboard goggles. The unique aspect is that we will combine subject-specific tailor-made 3D molecular models, exercises and assignments with immersive VR capabilities to allow students to actively develop spatial reasoning skills.

**Ton Blaazer, Prof. dr. Jacqueline E. van Muijlwijk-Koezen**  
are researchers at Vrije Universiteit Amsterdam

## Biodegradable and Compostable Nanoplastics

Normal plastic biodegradation and composting processes take up to 100 years in nature. In the best scenarios it breaks down into microplastics, which we as humans also get in our food in micro volumes. Even microorganisms are not safe from this catastrophe. Together with our group of nanotechnologists we have created a new form of nanomaterial plastic that biodegrades and composts naturally within 5 years.

All the chemical waste and compounds are recoverable through composting and Biodegradation certification standards ISO 17088 and BS EN 14995 Plastics- Evaluation Compostability.

Even though the plastic alternative we have created is chemically very weak in comparison to regular plastic, physically it is stronger. This means that a grocery bag created with our plastic can carry more weight and withstand more physical pressure.

**Mehran Aghazadeh and Ilias Spanjer**  
are researchers at University of Amsterdam



## Caribbean Creativity: Diversity Film Screenings in the Netherlands

The idea I would like to submit for AmSIA 2019 is to expand the capacity and professionalize the functioning of Caribbean Creativity, an Amsterdam based non-profit organization I founded as a result of my ongoing research on Caribbean and other ethnic minority cinema. More specifically, I would like to grow the screenings of independent Caribbean, Latin American and African films in Amsterdam and the rest of the Netherlands – films that otherwise do not reach Dutch film theatres and festivals. The aim of these so-called “diversity film screenings” – and the establishment of Caribbean Creativity as an alternative distribution and exhibition outlet of non-western films – is to diversify both the film programming and film audience in the Netherlands and, as such, contribute to greater cultural diversity and social inclusion in Dutch society.

*Dr. Emiel Martens is researcher at University of Amsterdam*



## Vibey: a Virtual Collective Vibe Mind to Augment Performer-audience Interplay in Electronic Dance Music

The socio-emotional aspects of dance and music touch upon the foundations of our human existence – tuning in on each other’s emotional states or “vibes” and interacting accordingly. While technological advances have led to an explosive evolution of musical expressions (particularly in electronic music), only few artists use artificial intelligence actively in their live performances – and none have exploited its potential to augment our shared experience of music.

We plan to implement a virtual collective vibe mind that augments (and even transforms) the dynamical interplay between live music performers and their audiences – here in the context of electronic dance music. Our collaboration combines state-of-the-art digital techniques for creating acoustic-electronic fusion music (i.e., techno jazz), next-generation brain-inspired artificial intelligence, and modern app technologies.

As a straightforward application of recent work on affective inference by the main applicant, we construct Vibey – a virtual organism whose emotional ups and downs depend intimately on audience behavior and modulate the vibes of the performer’s inputs in real-time via different samplers and synthesizers – in particular via arpeggiators (i.e., a software-based generator of notes and broken chords). This project will be accomplished through a collaboration between a computational neuroscientist, two professional musicians that specialize in organic techno (combining electronic and acoustic music), and a front-end app developer.

*Casper Hesp, Luc van Ruler, Loran Witteveen and Ronny Rook are researchers at University of Amsterdam*



## The use of VR for cognitive rehabilitation following stroke with Koji's Quest

Neuroscientific research has demonstrated that rehabilitation contributes to neural plasticity and the ability of the brain to rewire and reorganize following a lesion, thereby facilitating functional recovery.

Despite benefits, conventional stroke rehabilitation poses several limitations: it is time consuming and tiresome for patients, costly, labor and resource intensive, reliant upon the adherence of a patient, and limited in availability subject to location. Furthermore, research suggests that cognitive deficits following a stroke are often not adequately addressed as compared to motor function and should be a priority moving forward. An increasing number of studies propose that virtual reality (VR) can be successfully used for the neurorehabilitation of cognitive and motor dysfunction in stroke survivors. We propose an innovative new gamified approach to cognitive rehabilitation following a stroke using VR.

**Faviola Brugger-Dadis, Ruben Boyd and Sandy Rathod**  
are researchers at Vrije Universiteit Amsterdam



## DisPLACE: Digital Disability Hub

In aging societies people are living longer, raising the likelihood that they will experience disabilities. Disability histories are an underutilized source for generating solutions to this societal challenge. The DisPLACE consortium proposes a digital hub for the collection and interpretation of disability experiences, past and present, by researchers, disability service and public health organizations, students and educators, advocacy groups, the creative industries, and policymakers.

The hub includes:

1. a digital archive, to share historically-significant documents, images, and multimedia, and personal reflections by people with disabilities on historical events and contemporary issues,
2. an interpretive space, where researchers and organisations/industries will engage with these sources to answer questions about disability, resulting in new products, policies, services, and projects, and
3. a network zone, facilitating the exchange of information and advice on potential new research questions the hub can be used to answer.

**Manon Parry** is researcher at University of Amsterdam



## UCBOOKS.EDUCATION

ucbooks.education provides a white-label solution for students at an institution to buy, sell or lend their used textbooks to each other and access library content.

Due to the myriad of courses and social groups that form at the university, connecting with other students over textbooks becomes troublesome. Libraries also tend to have numerous library locations. Bringing all the book exchange and borrowing activity to one trustworthy place is convenient and timesaving for a student.

We integrate with most major library content management systems and provide a SAAS product to university libraries.

*Krishna Shukla is alumni at University of Amsterdam*



## DIAL: Digital Index of an Artwork's Life

Museum collection management systems are not designed to serve complex artworks or collectables that are variable or interactive by nature, whereas in theory museums are considered to be authoritative about their collection and objective in their role as caretaker. In practice, however, museum professionals interpret artworks when they are put on display, making informed decisions that nevertheless influence an artwork's life.

The database application DIAL – Digital Index of an Artwork's Life – acknowledges the impact of museum practices. By tracing possible changes in the character of an artwork over time, not only insight is provided, but also awareness is raised with the next professional responsible, eliciting a reflexive stance for careful decision-making.

The DIAL offers museums a tool that integrates dynamics in a static database, enriching the artwork with practices and making the professionals' roles transparent. The DIAL allows for an open approach and a critical stance at the same time

*Sanneke Stigter and Wiel Seuskens are researchers at University of Amsterdam*



# Partners & Sponsors



## **Gemeente Amsterdam**

The Amsterdam Metropolitan Area offers a unique business ecosystem for international companies to set up business, and is already home to 2,700 established international companies and 1,100 start-ups.

With easy access to continental Europe and its leading airports and seaports, a highly-educated workforce that excels at English, a favorable tax regime, special facilities for expats, and the world's fastest internet exchange, Amsterdam is a modern, safe, and surprisingly affordable cosmopolitan capital.

[www.amsterdam.nl](http://www.amsterdam.nl)



## **NKI-AVL**

The Netherlands Cancer Institute is at the international forefront of cancer care and research for already more than a century. The unique combination of health care and scientific research within the same institute offers great benefit for cancer patients. Specialized cancer care professionals work together in multidisciplinary teams every day to set up and carry out treatment plans tailored to the needs of individual patients because no two tumors are alike. Cancer patients or people suspected of having cancer can come to our hospital, known as the Antoni van Leeuwenhoek, to make use of this personal approach and the state-of-the-art research and treatment facilities. The research institute employs more than 560 scientists investigating many aspects of cancer development, diagnosis, treatment and epidemiology. Scientists at the Netherlands Cancer Institute have access to state-of-the-art research facilities supporting their basic, translational and clinical research. This scientific research could not be carried out without the institutional support of the Dutch Cancer Society, the Ministry of Health, Welfare and Sport, the many research grants obtained by our researchers from (inter)national funding agencies, and the generous donations made by individuals that support our research program. The Netherlands Cancer Institute is the only OECD designated Comprehensive Cancer Center in the Netherlands.

[www.nki.nl](http://www.nki.nl) and [www.avl.nl](http://www.avl.nl).



## **Sanquin**

Sanquin handles the blood supply in the Netherlands on a not-for-profit basis, meeting the highest quality, safety and cost-effectiveness standards. Sanquin is a centre of expertise in the field of blood and conducts scientific and clinical research in the fields of transfusion medicine, haematology and immunology. This knowledge is applied to the development and manufacture of a variety of pharmaceutical products, diagnostic tests and services.

[www.sanquin.nl](http://www.sanquin.nl)



## **SURFsara**

SURFsara bridges the gap between research and advanced ICT. They do this with scientific research in their DNA and with extensive expertise in high-performance infrastructure.

Thus we facilitate scientific research and we develop innovations for business.

[www.surf.nl](http://www.surf.nl)



## **Amsterdam health & technology institute (ahti)**

The Amsterdam health & technology institute (ahti) improves urban health and healthcare in Amsterdam and the rest of the world by connecting people, technology and medical knowledge through innovation and entrepreneurship.

### **Healthtech network**

Transforming healthcare requires talent, entrepreneurship and a multi-disciplinary approach. This is why ahti is part of a broad network of organizations, addressing opportunities in the market, connecting knowledge and, ultimately, creating impact.

[www.ahti.nl](http://www.ahti.nl)



### **V.O. Patents & Trademarks**

V.O. specializes in intellectual property (IP). They record your idea in a patent or take care of the registration of your brand or model. In this way they help you prevent others from using your technology or name in the Netherlands, Europe and the rest of the world. In addition, IP helps to strengthen your competitive position and offers opportunities for license or sales. This way you create clarity and certainty for your company or innovation.

[www.vo.eu](http://www.vo.eu)



### **UniQure**

uniQure is delivering on the promise of gene therapy – single treatments with potentially curative results. We are leveraging our modular and validated technology platform to rapidly advance a pipeline of proprietary and partnered gene therapies to treat patients with hemophilia, Huntington's disease and other severe genetic diseases.

We are advancing a focused pipeline of innovative gene therapies. We are currently conducting a pivotal phase 3 trial in our lead indication, hemophilia B, and will initiate a Phase I/II trial in Huntington's disease in the second half of 2019. Our pipeline of adeno-associated virus (AAV)-based gene therapies has been developed using an innovative technology platform, supported by industry-leading proprietary commercial-grade manufacturing capabilities.

[www.uniqure.com](http://www.uniqure.com)



### **Kennedy van der Laan**

Kennedy Van der Laan is een onafhankelijk Nederlands advocatenkantoor met 200 medewerkers, waarvan 100 advocaten. Sinds 1992 bedienen wij toonaangevende marktleiders, met specialistische juridische kennis op onder meer het gebied van IT, IE, privacy en verzekeringsrecht. Vanuit onze kantoren in Amsterdam en Eindhoven wordt wereldwijd gewerkt voor een breed scala aan cliënten, van startup tot multinational. De mensen van Kennedy Van der Laan hebben een pragmatische en betrokken mindset en staan dicht bij het dynamische werkveld van de cliënten.

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