

創孵世代

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I³ GENERATION = INCUBATION + INNOVATION + INVENTION

INNOVATION AND ENTREPRENEURSHIP COMPETITION

MACAO

for Technology Enterprises from Brazil and Portugal

2022

Virtuleap

w3.core

yqsen
nanotechnology

Organizer



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Diagnose Brain Degeneration with Virtual Reality

As Virtual Reality (VR) is becoming more sophisticated, devices such as VR headsets and VR goggles have become perfect gaming accessories and are now pouring into the healthcare sector. The utilization of augmented reality and artificial intelligence (AI) to present the treatments and examination results of our body conditions in a visual manner has inspired brand-new practical applications and tapped into more business opportunities. Virtuleap, the Portuguese startup that won the first place in the Innovation and Entrepreneurship Competition (Macao) for Technology Enterprises from Brazil and Portugal 2022, aims to provide assessment and training of a range of cognitive abilities by combining VR with AI technology.

Founded in 2018 in Lisbon, Virtuleap is a start-up devoted to the design of VR games. Contrary to the societal concerns over the

mental and physical disorders brought by common VR games, including addiction and VR-induced dissociative disorders (VRIDD), Virtuleap has created a library of VR games for the diagnosis and treatment of cognitive issues. Amir Bozorgzadeh, CEO and co-founder of Virtuleap, walked us through how Virtuleap combined VR and neuroscience to address the huge social impact caused by cognitive disorders in a post-competition interview with us, although he could not make it to Macao himself.

The direction in which Virtuleap is heading is closely related to Amir's work experience. Amir is a contributor to two tech news platforms, VentureBeat and TechCrunch, and at the same time, he takes an active part in social affairs, especially those related to the elderly. In addition, he also started two businesses in Dubai, one was the first time bank, Time Dirham, in the



Middle East, and the other was Gameguise, a mobile game studio. Built on his previous experience, Virtuleap is meeting point of social care and VR technology.

Standing apart from the first generation of the screen- or paper-based neuropsychological assessments and the second generation of 2D cognitive training applications, virtual reality literally engages the whole body. By manipulating the autonomic nervous system and vestibular system, the whole body is convinced to believe the experience in virtual reality is real. This creates amazing opportunities for

the healthcare industry as psychological data, physical data, and postural data can all be collected. Moreover, the system can also sense very subtle quivers and vibrations. It also features AI learning algorithms which calculate an individual's cognitive load in order to assess if the individual is focused, bored or stressed out in that environment.

To this end, neuroscientists at Virtuleap have harnessed virtual reality to create a library of 15 VR cognitive games to test and train a range of cognitive abilities, like memory, problem-solving, information processing, as well as motor control skills,



spatial orientation, and spatial audio awareness. Amir also advised that these games need to be, or should ideally, be used on a daily basis. "These games are like 'gym for the mind' that help monitor the body and facilitates rehabilitation due to lifestyle factors," said Amir.

According to Amir, Virtuleap's first client is one of the biggest retirement community in the world, — the American Association of Retired Persons (AARP). The company also targets Chinese clients, with Chinese included as one of the five languages provided by its game application, Enhance. Furthermore, its application is compatible with all trending VR devices on the market, which thus creates a closed loop in its business model. Its performance in the first three quarters this year reached €1.5 million (approximately MOP12 million).

"Up to now, we have 43,000-plus registered users on Enhance, among whom 5% are Chinese users. We cooperated with colleges and universities as well as businesses in Beijing and Shanghai before, and we are aware of China's massive market size. Therefore, we participated in this Competition in an endeavor to open up business opportunities and especially to look for potential business partners."

In the Innovation and Entrepreneurship Competition (Macao) for Technology Enterprises from Brazil and Portugal 2022, Virtuleap won the championship with its mature market and outstanding performance. As a reward, it will get onto a fast track to build its presence in the Guangdong-Hong Kong-Macao Greater Bay Area and enter the Chinese market. Amir also mentioned that "we are now developing



the user data analysis feature on Enhance based on AI algorithms and machine learning technology. In the path forward, not only will the field of cognitive decline be focused on, but also industries that work with high pressures, such as sports and military areas, as well as education sectors, including basic education, secondary

education, and higher education." Optimistic about the future of the Chinese market, he believes that Virtuleap's participation in the Competition will serve as a "stepping stone" for it to "join hands with hospitals, clinics, and nursing homes in China down the road to push the envelope of VR application in the healthcare sector."



13. Virtuleap - Amir



The competition was attended and officiated by Deputy Director Chan Hon Sang of DSED, Deputy Director Huang Shengbiao of the Economic Affairs Department of the Liaison Office of the Central People's Government in the Macao SAR, Acting President U U Sang of the Board of Directors of the Macao Trade and Investment Promotion Institute, Coordinator Teresa Mok from the Support Office of the Permanent Secretariat of Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries (Macao), Cheang Kun Wai, member of the Administrative Committee of the

Science and Technology Development Fund, Deputy Director Dai Ge of the Zhuhai Science and Technology Innovation Bureau, Chen Xinhua, chief Industrial officer of Zhuhai Dahengqin Development Co. LTD, Vice Rector Claudia Xu of the University of Macau, Associate Vice President Zhu Yizhun of the Macau University of Science and Technology, and Managing Director leong Chi Kuong from the Bank of China Macau Branch, Deputy Director Huang Zhongjian of the Economic Development Bureau of the Guangdong-Macao In-Depth Cooperation Zone in Hengqin, CEO of MYEIC, Lam Ka Vai.

Award winning projects

Virtuleap

Champion

Virtuleap



Virtuleap combines neuroscience and virtual reality (VR) to help increase attention levels, address cognitive illnesses and learning challenges (e.g. ADHD), and delay onset of cognitive disorder (e.g. Alzheimer's disease). Virtuleap has developed the Enhance VR app, and through gamified cognitive training exercises designed by neuroscientists, it can assess and train a range of cognitive abilities such as memory, attention, information processing, cognitive flexibility and problem-solving. VR users can have immersive experiences in tracking their body movements and collecting both psychological data and other useful physical data such as heart rate, facial gesture and pupil sizes. The data collected can be transferred back to the Virtuleap platform for more precise neuropsychological evaluation.

W3.Care

First Runner-up

W3.Care



W3.Care offers a telemedicine and artificial intelligence(AI) solution in emergency care. By the combination of technologies, it can help the medical staff on ambulance to get automatic and telemedicine support in diagnosing the patients correctly, and choosing suitable treatments and the appropriate hospital for them. In addition to instructing and communicating with the colleagues in the ambulances, it can help staff in hospital to monitor the real-time traffic situation in order to prepare further action. By filling the gap of support in pre-hospital care, W3.Care can help to rescue more life, especially those with serious acute illness such as heart attack, stroke and physical trauma.

Yosen
nanotechnology

Second Runner-up

Yosen



Yosen has developed a nanotechnology-based intelligent delivery system to enhance therapeutic efficacy by obtaining different lipid nanoparticles for efficient and diverse delivery of various drugs and nutrients, such as active ingredients including vitamins, botanical extracts and peptides. These nanoparticles can protect the active ingredients and are highly biocompatible with our cells, thereby increasing nutrient absorption or bioavailability. Currently, Yosen has developed two product forms, which are the dietary supplement Ydrosolv and the Ynano food ingredients. Studies have shown that absorption rate of Yosen's CoQ10 Ydrosolv, comparing to other Q10 pills and capsules in the market, is 5 times faster absorbed by human body.

ByMyCell
Genomics made simple

Greatest Potential for Development in the Greater Bay Area Award

ByMyCell



ByMyCell is a platform in which offers microbial genomics analysis services from end to end. After the customers send the samples, the genomic data will be generated followed by data analysis using bioinformatics on the cloud, and at last the report will be given to the customers through its app. One main app on it is ByMySoil which is dedicated to the soil microbiome analysis. Through this app, customers can generate the microbial profiles of the soil, and this helps them to use bioinoculants suitable for the specific soils and cultures, which can reduce the cost and the employments of chemicals such as fertilizers and pesticides, to contribute to a green economy.

R5m
marine solutions

Greatest Potential for Transfer of Technological Value Award

R5m Marine Solutions



R5m Marine Solutions specializes in providing engineering solutions to face coastal and offshore maritime challenges, with the aim of promoting more efficient management of coastal areas and increasing environmental sustainability. The COAST assessment tool used by R5m Marine Solutions provides coastal modelling scenarios, pre-designed structures and cost-benefit assessments of the given scenario. The COAST solution can help anticipating risk scenarios and loss of territory due to coastal erosion, and can be applied to different areas worldwide, such as the Guangdong-Hong Kong-Macao Greater Bay Area.

Projects introduction

DruGet



As the traditional way of new drug development is very expensive and time-consuming, DruGet provides a digital platform solution to facilitate the process. In DruGet, interested molecules will be sent to the platform by the users, then pharmacokinetic, toxicological and forced degradation prediction analyzes would be chosen to be applied. At the end of the process, a report will be generated to show what molecules are potential candidates worth further study and what are able to be removed from the candidate list. By using computational technology, it hopes to provide faster and more assertive responses to promote the drug development process.

Fix it



Fix it is a Brazilian startup which targets at helping people with musculoskeletal disorder by providing health solution. Because of the disadvantages of traditional plaster cast, Fix it uses 3D printing manufacturing and biodegradable plastic material to produce the splints. Currently the company concentrates on providing the software and the solutions on its own platform to the clients by outsourcing the production and logistics processes.

Nevaro



A Portuguese startup Nevaro provides a mobile app HOLI for mental health management and therapeutics, in order to improve workplace wellbeing and optimize work performance. It uses clinically-validated gamification strategies and biofeedback technology, to generate data-driven and evidence-based personalized journey for the user to cope with stress, anxiety, depression and other negative emotion. Also it will generate periodic reports to the company managers, letting them to notice about the mental states of the employees and to act if necessary.

Nevaro won the first place on the piloting program contest Protechting 4.0 from Beta-i, Fedelidade and Fosun.

VETRA



VETRA offers a patented innovative versatile biomaterial, the Bioglass. It is composed of elements that can be found in human body. Therefore, it is safe, fully resorbable and highly bactericidal and fungicidal. It can effectively speed up cell proliferation by up-regulating the expression of various families of genes, leading faster wound healing, lower treatment costs and faster hospital discharge. The wound-healing property of Bioglass makes it a potential treatment for chronic infected wounds. Based on the Bioglass technologies, VETRA has developed several innovative solutions such as ocular implants, nerve guides, injectable materials and 3D printed bone grafts.

Biopolix



Biopolix has developed a bioresin Biox001, which is biodegradable plastic, to alleviate the severe environmental problems caused by plastic. Biox001 is made from renewable sources through biotech process in which no harmful substance and water are needed. The physical characteristics of the material, such as melting point, fluidity and strength can be adjusted by changing its biopolymer matrix according to the requirements, so it is promising to be used in different industries to produce various productions.

Wakaru



The Water Wise System developed by Wakaru utilizes artificial intelligence for monitoring and optimizing the management of water utilities with the objective of reducing water loss, abnormal water consumption and extra operation costs. The Water Wise System studies data received from sensors, calculates different predictions and performs real-time event correlation to identify anomalous situations and pattern. The system enables water utilities to process massive streams of data in real time, control and analyze through dynamic dashboard and monitor parameters such as water quality, energy consumption and water meter in real time. Water Wise System is now in use in 3 cities in Portugal and Brazil with an annual revenue of 140,000 Euro.

Projects introduction

Nanosens



Nanosens is a Brazilian biotech startup which focuses on the development and manufacture of reagents for in vitro diagnostics (IVD) sector. Nanosens applies the lateral flow immunochromatography technology with colloidal gold particles or latex microspheres to develop rapid IVD for the detection of respiratory, gastro-enteric and blood-borne pathogens, as well as the detection of antibiotic resistance markers. Apart from the rapid ICT assay for SARS-COV-2 Antigen detection and SARS-CoV-2 IgG (RBD & NP) Assay for the detection of COVID-19 infection already developed and sold in the market, Nanosens is investigating possible applications of nanotechnology on colloidal particles in the medical diagnostic field.

Nanosens is currently at TRL stage 8 and its products are already available for sale in 27 Brazilian federal units.

Kimera



Kimera has developed Follimera r-eCG by using an innovation biotechnological process based on "recombinant protein expression technology". Follimera r-eCG is a reproductive hormone to stimulate ovulation and improve of livestock in reproduction and fertility. Compared with traditional approach of hormone production, Kimera's hormone manufacturing process is carried out in laboratory, and therefore will not cause problems of animal suffering and animal cruelty. Follimerar-eCG can help reduce the cost of assisted reproductive protocols such as artificial insemination, and thus increase animal pregnancy rates. Since livestock production constitutes an essential component in agricultural economy, it has a large market globally. Kimera is currently under incubation at UPTEC-Portugal and its next step will be to expand into Europe and other markets.

In Situ



In Situ is a startup using stem cell as a tool to develop innovative products that can help to improve the health and the life quality of people. Currently it has 3 products developing which are focusing on different health problems. The most promising one among them is the 3D biodressing containing stem cells aiming at treating chronic wounds and severe burns, the other products include the cell-free topical formulation ointment containing extracellular nanovesicles for the treatment of less complex wounds and scars, and the 3D biograft targeting for the treatment of gingival recession. By using regenerative medicine strategy, these products provide effective healing, decrease of related complications and reduction of cost.

Focus on big health and new materials, DSEDТ continues to hold entrepreneurship competition to explore potential sci-tech startups from Brazil and Portugal



The Innovation and Entrepreneurship Competition (Macao) for Technology Enterprises from Brazil and Portugal 2022 was held on September 29 by the Economic and Technological Development Bureau (DSEDТ) of the Macao SAR Government. The competition aims to promote Macao's role as a platform between China and Portuguese-speaking countries. It also helps Macau become an important pillar in facilitating the development of International Center of Innovative Technology and the "Guangzhou-Shenzhen-Hong Kong-Macao" innovation and technology corridor in the Greater Bay Area. Fourteen technology and innovation enterprises took part and competed each other in the online roadshow presentations. The champion went to Virtuleap from Portugal. Furthermore, the participating startups will be arranged to take part in an array of international expositions and bin held in Macau to continuously boost the collaboration and interconnection between China and Portuguese-speaking countries in scientific and technological innovation.



In his speech, Deputy Director Chan Hon Sang of DSED said that the Macao SAR Government is actively leveraging Macao's role as a platform between China and Portuguese-speaking countries and assisting the Greater Bay Area in the development of an international innovation and technology corridor. Following the success of last year, the competition this year revolved around big health and new materials, showcasing the scientific and technological strength of Brazil and Portugal while aligning itself with the developing scientific and technological areas in the Greater Bay Area, including Macao and Hengqin. While increasing scientific and technological exchanges between China and Portuguese-speaking countries, it can also contribute to the development of the Greater Bay Area. He also mentioned that with the support of the Ministry of Science and Technology of the People's Republic of China, Macao, Hengqin, and Zhuhai are actively building "The Center for Science and Technology Exchanges and Cooperation between China and Portuguese-speaking Countries" in a bid to promote their synergy in innovation, entrepreneurship, and scientific and technological cooperation.

The competition this year continued to adopt the approach of "recommended by localities, reviewed in Macao, establishing foundations in the Greater Bay Area", and a total of 14 outstanding projects were recommended for participation by a number of incubators and higher education institutions from Brazil and Portugal. A 10-minute online roadshow presentation and Q&A session were held for each of the start-ups in the final of the competition and questions were asked by a panel of judges comprised of professional investors, university instructors, heads of financial institutions, and representatives of incubators. Winners of five awards were then selected.

After online roadshow presentations, Virtuleap from Portugal won the championship, and W3.Care and Yosen from Brazil were announced as the first and second runner-ups respectively. The winners were awarded corresponding certificates and prizes of MOP150,000, MOP100,000, and MOP80,000 respectively. ByMyCell from Brazil won the "Greatest Potential for Development in the Greater Bay Area Award" and R5m Marine Solutions from Portugal won the "Greatest Potential for Transfer of Technological Value Award", each receiving a certificate and a prize of MOP50,000.



In the afternoon, after the conclusion of the competition, there were matching sessions for the participating projects to explore the feasibility of industry-academic-research collaboration and project implementation with investors, enterprises, colleges and universities, and incubators from mainland China. In the future, these participating startups may have the opportunities to take part in large-scale sci-tech expositions in Macao, including Macao International Trade and Investment Fair (MIF),

Portuguese Speaking Countries Products and Services Exhibition (Macao) (PLPEX) etc. to show their strength in scientific and technological innovation to exhibitors and investors from all over the world, especially mainland China, and to seek opportunities for further investment, financing, and business cooperation.

The competition was supported by the Jiangsu Provincial Department of Science and Technology, Guangzhou Municipal Science and Technology Bureau, the Economic Development Bureau of the Guangdong-Macao In-Depth Cooperation Zone in Hengqin, the Zhuhai Science and Technology Innovation Bureau, and seven incubators from Brazil and Portugal, and implemented by the Parafuturo de Macao Investment and Development Limited (PFM) and the Macao Young Entrepreneur Incubation Centre, in cooperation with the Bank of China (Macao Branch) and Banco Nacional Ultramarino, S.A.





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