

Jockey Club Enhancing Youth Empathy Project
through Immersive Visualisation

賽馬會「見·同理」計劃



無障創客創作誌

TEDY MAGAZINE

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關於 賽馬會「見·同理」計劃



賽馬會「見·同理」計劃分為三個項目，旨在讓香港青年於以下三方面建立同理心，分別是：

- 一、 少數族裔
- 二、 長者及傷健人士
- 三、 環境及自然生態

本計劃由香港賽馬會慈善信託基金捐助和香港城市大學推行，利用城大於沉浸式虛擬實境方面的技術優勢，鼓勵香港青年以「觀點取替」及「角色取替」的方式發展不同技能，繼而以創新方法協助服務對象面對挑戰及解決困難。

關於TEDY「無障創客」

TEDY「無障創客」是賽馬會「見·同理」計劃的其中一個教育及社區項目，旨在培養學生對社會的責任感和對年長及傷健人士的同理心。項目致力培養學生的創意、育成創新設計，並靈活運用科技以帶來社會創新。項目提供平台，讓學生將與有特殊需要的受益者交流，透過共同設計、開發及生產度身訂造的康復輔助設備，解決他們的日常問題，改善生活質素。

Introduction to Jockey Club Enhancing Youth Empathy Project through Immersive Visualisation



Jockey Club Enhancing Youth Empathy Project through Immersive Visualisation enables young people to develop compassion for:

- 1) ethnic minority groups
- 2) the elderly and disabled
- 3) nature and the environment

The Project is funded by The Hong Kong Jockey Club Charities Trust and led by City University of Hong Kong. It comprises three related programmes that utilise the University's strengths in immersive visualization technology. Young people will be encouraged to develop their skills through "perspective-taking" and "role-taking", and create innovative solutions that meet the challenges and problems that different groups face.

About TEDY (Technologies for the Elderly and Disabled people by Youths)

TEDY (Technologies for the Elderly and Disabled people by Youths)

is one of the education and community programmes under the Jockey Club Enhancing Youth Empathy Project through Immersive Visualisation. It aims at cultivating a stronger sense of social responsibility and empathic understanding among students for the elderly and people living with disabilities. The programme incubates students' original ideas and innovative designs for technologies that create social innovations. By bringing students and the target beneficiaries together, custom-designed rehabilitation aids can be made to solve daily problems and improve the quality of life.

前言

作為一個教育工作者及創科研究人員，我經常問自己如何可以對社會產生更大的影響力。在大學的教學經驗中，我看到學生的創意、對實踐意念的決心和毅力。我希望他們的努力不僅僅能讓他們拿到更好的學業成績，更可以正面地影響身邊的人、甚至整個社群。

幾年前我有幸獲得城大「創意孵化器」教學資助計劃的支持，建立了一個名為「可穿戴科技創新實驗室」的教學平台，為體驗式學習法注入科技及社會創新的元素，以工作坊、小組項目等形式，鼓勵學生將其創意構想付諸實踐，並嘗試以創新科技解決社會問題。當時學生創造出不少優秀的作品，並獲得獎項、傳媒報道等不同形式的肯定。但為什麼他們的作品還沒有對社會產生更大的影響力？我一直在問自己。

直至有一天，我跟一名學生成員聊天，當時他設計了一件輔助聽障人士與別人溝通的設備。我問他概念從哪裏來，他說他沒有認識聽障人士，問題以至解決方案均是他自己想出來的。我恍然大悟，明白過程欠缺了什麼。學生倘若沒有對社會問題抱有真切的理解，尤其是針對弱勢社群的困難時，單憑個人經歷和領會往往不足以找出問題核心精髓以至對症下藥。作為一個社會創新者具備創意和執行能力固然重要，但富有同理心、可站在他人的角度思考和處理問題的能力可能更為重要。這個領悟成為了我在構思「無障創客」時的一個關鍵元素。

在過去三年，我們非常感激能獲得多間社福機構、院舍及公立醫院的大力支持，為我們安排了無數場會面，讓學生可以親身接觸受惠對象，包括年老長者，視障、中風、肢體傷殘人士及其照顧者，透過交談深入了解他們生活中遇到的困難，共同討論可行解決方案。學生在設計及執行過程中，非常重視使用者感受，而且會邀請使用者測試產品，然後對設計進行修正，反覆改良，務求設計出最合用的輔助科技。這種貼地、富有人情味的設計，比起單單能夠解決問題，或一相情願、天馬行空的設計更難能可貴及有意義。

在此特別鳴謝香港賽馬會慈善信託基金的慷慨捐助，令這項極具意義的項目得以順利推行。我亦要衷心感謝「無障創客」團隊成員在過去每一天的積極付出、盡責表現，以及對學生和受惠對象的友愛關顧。最後，我希望向每一位曾參與「無障創客」的同學致謝，感謝你們的熱心、愛心和同理心。

我相信「同理心」能解決很多問題。在鼓勵青年人要以同理心思考和處事的同時，我們也應明白他們同樣需要被理解。

無障創客項目負責人
林妙玲博士
創意媒體學院助理教授
2019年10月



Foreword

Being an educator and researcher of emerging technologies, I often ask myself: what more could I do for today's society? As I taught at the university, I witnessed again and again the astounding creativity in our students and their impressive motivation to bring their ideas into life. It is my wish that their hard work be not only rewarded by academic grades, but to be appreciated by those around them or even the rest of society.

A few years ago, I was lucky enough to be supported by CityU's "Idea Incubator Scheme" to establish the "Wearable Innovation Lab". It was an education platform which materialised students' ideas through hands-on workshops and group projects that encouraged the use of technology and innovation in solving problems faced by our society. Our students at the time created many outstanding projects, winning various awards and was covered by the media. However, they did not make a lasting impact on society. I kept asking myself: why?

One day, I was conversing with one of my students who designed a device to help people with hearing impairment communicate with others. I asked him what was his inspiration: to which he replied that he did not approach anyone with hearing impairment, and had thought of the problem and solution entirely by himself. It was then that I finally realised what was missing. Our students could not possibly truly understand the problems, especially those involving the disadvantaged in our society, based on their own experiences alone. How then, would they be able to build the best solutions? While creativity and the ability to act is indeed important for social innovators, the ability to step into other's shoes and empathise may be equally, if not more, important. This is one of the major elements I hoped to incorporate into TEDY.

In the past three years, we received support from numerous organisations, from welfare agencies to public hospitals; I would like to give them our utmost thanks. They enabled our students to meet face-to-face with potential beneficiaries including: the elderly, visually impaired, stroke patients, people with physical disabilities and their caretakers. Bringing the potential beneficiaries and students together in the development process allowed the students to better understand the challenges faced by these social groups, and to produce design iterations with continued input and testing by the intended end users. The result was that we were able to build much more meaningful assistive devices which were not only more suited to the task; they exude empathy from their design. This would not have been possible if we continued working in isolation.

I would like to thank The Hong Kong Jockey Club Charities Trust for their generous donation which made this meaningful project possible. I would also like to thank the TEDY team, who brought together our students and potential beneficiaries and provided them with the closest support. Lastly, I would like to thank all our students who had participated in TEDY, for your hard work, passion and unmistakable empathy.

I believe that "empathy" could be the key to solving many problems we have today. However, it goes both ways: while we encourage youths to empathise with others, we too, should strive to empathise with them.

TEDY Programme Coordinator
Dr. LAM Miu Ling
Assistant Professor of School of Creative Media
October 2019





精選作品訪談 Interviews

訪談一 Interview 1

模擬學車 — 「ProsRoid」電動輪椅駕駛訓練器
Learning to drive by simulation — "ProsRoid",
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Silent Alarms — "Quiet Buzzer", a Soundless Timing System

訪談四 Interview 4

口耳代眼睛 — 「Talktag」錄播語音便條 助視障人士自主辨物
Seeing with Sound — "Talktag",
Audio memos helping the visually impaired identify objects

模擬學車 — 「ProsRoid」電動輪椅駕駛訓練器

香港社會生活節奏快，人多車多，總是匆匆忙忙。鬧市中，四肢健全的朋友尚且行動不易，何況是輪椅使用者？醫院管理局雖然搭建了室內實景供輪椅使用者用以練習，戶外情況則依靠海外模擬軟件，好讓初學者熟習輪椅操作，惟場景並非從本地取材，與實際情況多少有點差別。

局方通過城大無障創客 (TEDY) 計劃促成配對，找來擅長創作模擬場景的創意媒體學院學生盧志榮 (Eric)，研發出電動輪椅「模擬學車」項目。他們自 2017 年 9 月初次見面，了解使用者的需要，一年後確認初步框架，至今終於製成電動輪椅駕駛訓練器「ProsRoid」。Eric 參考了香港其中一條最繁忙的街道——西洋菜南街，模擬街景和路面的凹凸情況，讓輪椅使用者熟習鬧市行走的技巧。他又根據醫療人員的意見，設定七個場景，集中訓練走直路、通窄門、搭升降機、

上落行人天橋等日常「難關」。開發過程中，盧志榮一邊收集用家意見，一邊改良設計，例如加入多角度鏡頭等。軟件將持續更新，並加入更多實用場景，務求未來可按特定客戶要求作出個性化修定。「ProsRoid」不但提供輪椅學車的機會，更容許醫療人員根據練習紀錄進行評估。軟件亦可配合虛擬實境 (VR) 眼鏡，營造更逼真的效果。

喜愛電玩的 Eric，修讀創意媒體的原意是開發遊戲軟件。自從經 TEDY 轉介合作之後，他成功找到新方向。尚未畢業的他已成立公司，專門開發應用於醫療的模擬科技。幫助傷健人士之餘，作為開發者，Eric 也自覺有得着：「讓我的知識能真正應用於社會。」



Learning to drive by simulation — “ProsRoid”, the Power Wheelchair Simulator

Hong Kong is a bustling metropolis. In this fast-paced city, where traffic and crowds are the norm, it can be difficult for anyone to get around. Imagine how much more difficult it is for wheelchair users. The Hospital Authority (HA)'s rehabilitation centre in Hong Kong is tasked with preparing new wheelchair users to face the challenges of navigating our crowded, narrow streets.

While the centre already has an indoor facility, where new wheelchair users can practice safely navigating around obstacles, they cannot fully recreate many scenarios that users may encounter outdoors. The solution is to use a virtual simulator, but the existing programs are inadequate, as they do not have scenarios specific to our complex city.

Having identified this shortcoming, the HA reached out to TEDY to fill the gap. Since then, Eric, a School of Creative Media student well-versed in building virtual worlds, has been hard at work developing a new wheelchair simulator that meets the specific needs of the HA. They first met in September 2017 to identify the key objectives, and agreed on a plan about a year later. The result of the efforts is the ProsRoid power wheelchair simulator.

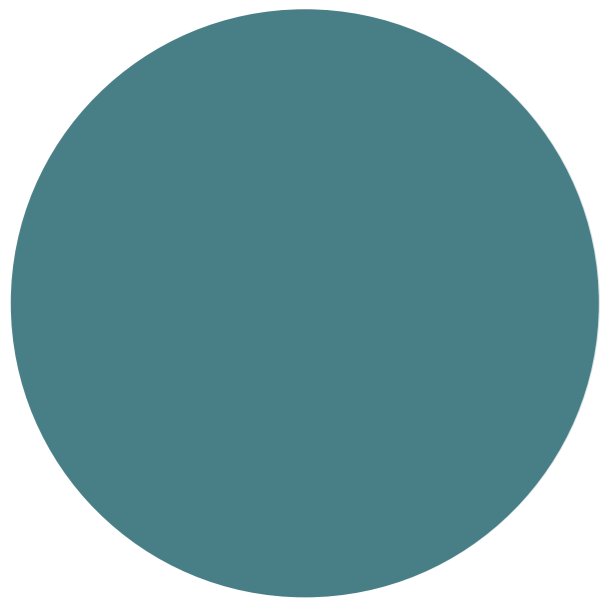
In this simulator, Eric has recreated a section of one of Hong Kong's busiest streets: Sai Yeung Choi Street South, in Mongkok, down to its bumps and various other peculiarities. New wheelchair users can now safely practice navigating the street at their own pace in a virtual environment. Also included are seven scenarios that poses different challenges wheelchair users may encounter every day in Hong Kong, such as manoeuvring through narrow spaces, taking the lift, and crossing pedestrian bridges. These scenarios are designed in collaboration with rehabilitation professionals to match



the needs of the rehabilitation centre. Their feedback has also contributed directly to the inclusion of key features, such as multiple camera angles, and users' ability to review their actions to evaluate their performance and skill in learning how to use a power wheelchair. More updates and scenarios are planned, and the system can be extended to meet the needs of different users. The simulator is also virtual reality (VR) enabled and can be used with a VR headset for complete immersion.

Eric, an avid player of video games, applied to the School of Creative Media to move closer to his goal of becoming a game developer. Now, through TEDY, he has found a new direction, which allows him to apply his knowledge and passion for video games into making something that will change the lives of people with disabilities. Although he has not yet graduated, he has already established a company to continue to develop simulation technologies for rehabilitation. "This allows me to use my skills for the good of society," says Eric.





體驗距離 — 360度全景 紀錄片《與視覺無關》

戴上虛擬實境 (VR) 眼鏡，投入視障者盧勁馳的故事。首先看到的是無動靜的瓦斯爐，鏡頭右轉見到盧勁馳坐在桌前，將藥水慢慢滴進杯中，倒了一點，舉起來仔細看；再倒一點，走近窗邊再看。他到底想看清楚甚麼？想走近，卻又無法前行。

「不能 zoom 是 360 度 VR 攝影的限制之一。」城大創意媒體學院四年級學生陳卓斯 (Karen) 說。Karen 為盧勁馳拍攝紀錄片《與視覺無關》，作為自己的畢業作品。後期得知對方即將赴美治病，拍檔周曉林 (Helen) 指，盧勁馳與當地醫生聯絡多時，終能成行，機會難得。二人成功獲得「無障創客」(TEDY) 的資助，與拍攝對象同行，紀錄治病過程。

紀錄片着重故事訊息，但虛擬實境拍攝更着重讓觀看者自己感受。定點拍攝的設定，紀錄者的介入有限。觀眾可以更自由地探索影像空間，但同時需要更多耐性觀察每個動作。她們早前帶着影片到中小學放映，學生反應踴躍，提出多個有趣問題；反而公眾放映的場次，成年人更關心影片的「結局」。

談到「結局」，影片尾聲是盧勁馳如常地進行伸展運動，盧媽媽為他打點家務，畫面日常不過。Karen 指盧勁馳的情況正是如此——病情暫時不會有大變動，治療將會周而復始地進行。難有突破的長期病患，他人難以理解，正如「觀眾戴着 VR 眼鏡的視點和拍攝對象的視點永遠有距離」。與其要求觀眾明白，陳卓斯更希望作品能夠做到「情感上的理解」，再引導觀眾思考如何在生活中作出改變。「首先，就是要讓人看見視障人士怎樣生活。」





So close, yet so far — "See without Seeing", a 360° Documentary



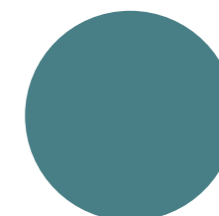
On the left is a gas stove, not being used. On the right, sitting at a table, LO Keng-chi, who is visually impaired, slowly pours medicine into cup. He picks it up, looks at it carefully, pours more into the cup, moves towards the window, and looks at it again. Just what is he trying to see? You try to move closer, but you can't because, you're watching it all from a virtual reality (VR) headset.

"You can't zoom in when framing a 360° video", says Karen, a year 4 student in the School of Creative Media. "See without seeing", a documentary about LO, is Karen's graduation project. LO had been in touch with a doctor in the United States to seek relief from an undiagnosed condition. When Karen, along with her filming partner, Helen, found out that LO had finally decided to fly to the US for treatment, they jumped at the opportunity to follow LO and cover his journey, as part of a film project sponsored by TEDY.

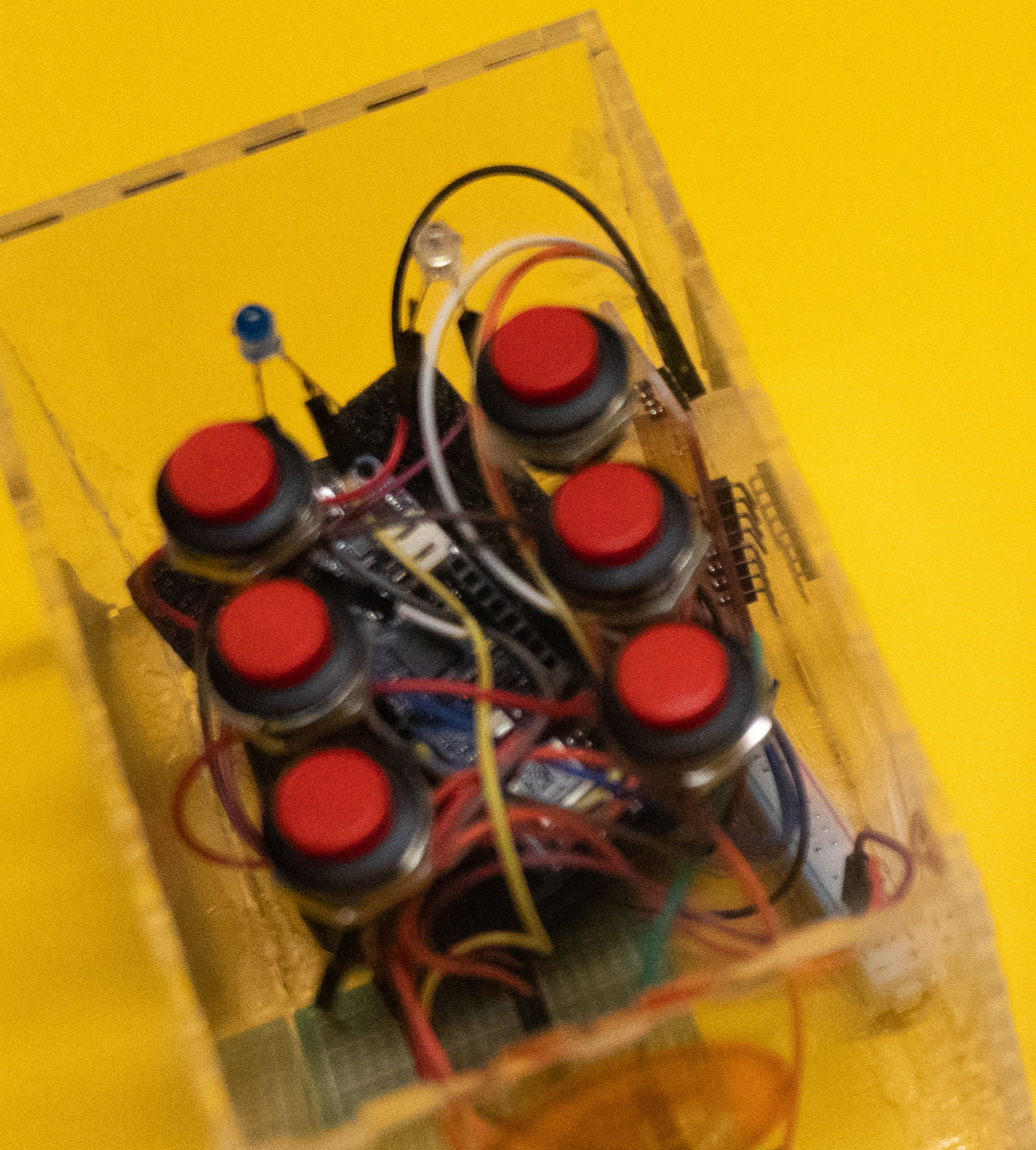
At the heart of the documentary is the message the videographers want to deliver. But rather than just telling a story, the 360° video is more about bringing LO's experiences and emotions straight to the audience. Unlike traditional video, once the camera is placed and the record button is pushed, everything in the scene is captured, leaving little room for the documenters to frame the story. The audience can freely explore the scene, but they must also examine the events on their own. Different people end up having different perspectives; primary and secondary school students asked many questions about LO's actions, while adult viewers in the public screening sessions were more concerned about the "ending".

The documentary ends with LO doing stretches and his mother conducting the usual household chores. It is as everyday as it gets, and as Karen points out, it is a true reflection of his current situation. His condition will not change dramatically in the near future; all he can do is work slowly and continuously on his treatment.

Perhaps we will never understand how LO feels about living with his condition despite watching him through a VR headset. But this is not about understanding LO's thoughts as much as it is about the audience themselves. Karen hopes that the audience will take LO's experiences, which they will never have, as an opportunity to rethink their own lives. She states: "First, we must show the world how people with visual impairment live."



無聲鬧鐘 — 「Quiet Buzzer」 靜音時計裝置

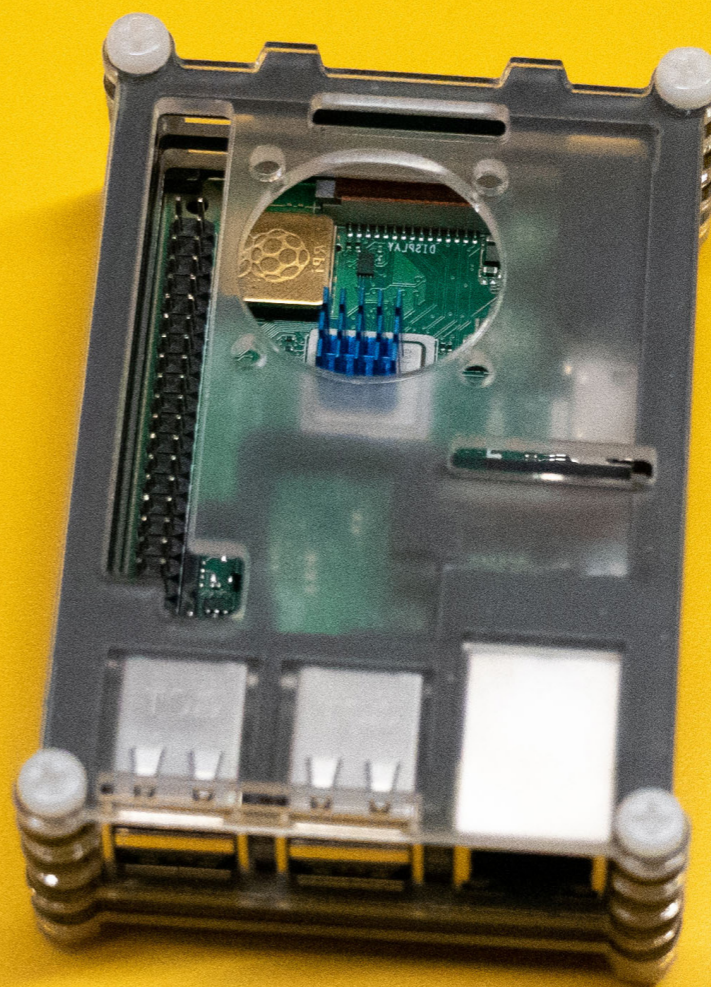


「唸唸唸唸……」時間掣的鬧鐘響聲此起彼落，這裡是黃大仙樂力長者日間訓練中心。因應患者情況，各種訓練需時不一，由5至20分鐘不等。中心座位超過60個，職員只有10人左右。為了方便安排物理治療，每項器材現時配設時間掣，完成即會響鬧通報。

試想像，多個鬧鐘同時響鬧，職員難以辨別聲音來源。部分腦退化長者更誤以為電話響，訓練期間掏出電話接聽，影響進度。其他長者見狀，又會出言直說對方「好奇怪」，可能影響患者自尊。八小時工作環境，鬧鐘響個不停，職員也難免感到困擾。如何不影響他人，而又可以達致提醒效果？中心經由TEDY聯繫管理學系蔡穎兒，以

及電子工程學系的陳梓軒、源植鏗、陳朗然、黃城峯，嘗試在減少介入場地設置的情況下，用低成本解決噪音問題。自去年10月起，團隊與中心接觸，了解用家需要，得知長者不喜歡束縛，手帶手繩或會引起不適。團隊建議使用NFC技術，配合伺服器、遙控器和屏幕，推出「Quiet Buzzer」裝置。中心無須鋪設線路，只須將NFC標籤預先貼於訓練器材附近，即可用遙控設定訓練時間，職員亦可透過平板電腦監察各個使用者的進度。

負責項目的社工杜姑娘表示，系統測試時已感受到中心環境「安靜很多」。她認為，裝置雖然看似「好細」，但效果顯著：方便職員同時照顧多名長者之餘，長者運動期間亦不受噪音騷擾，「希望長者身體雖然有所限制，各種能力不如從前，但都可以維持他們的生活質素不會下跌」。



Silent Alarms — "Quiet Buzzer", a Soundless Timing System

"Beep Beep Beep..." is what you'd likely hear every other moment inside the Lively Elderly Day Training Centre. Located in Wong Tai Sin, this centre can serve over 60 elderly people at once. Its attendees perform various different physical exercises, usually between 5 to 20 minutes each, to meet individual rehabilitation goals. For the 10 active staff serving in the centre to keep track of everything, the centre uses these beeping audible timers to alert the staff when an attendee has finished their current exercise.

Now imagine multiple timers going off at the same time: do you think you can work out where attention is actually needed? This is a constant struggle for the centre's staff, who have to deal with these noises up to 8 hours a day. Some elderly attendees with dementia even mistake these sounds for their own phone's ringtone, drawing unnecessary attention as they scramble for their phones, to everyone else's confusion and their own embarrassment. Clearly there is room for improvement: but how?

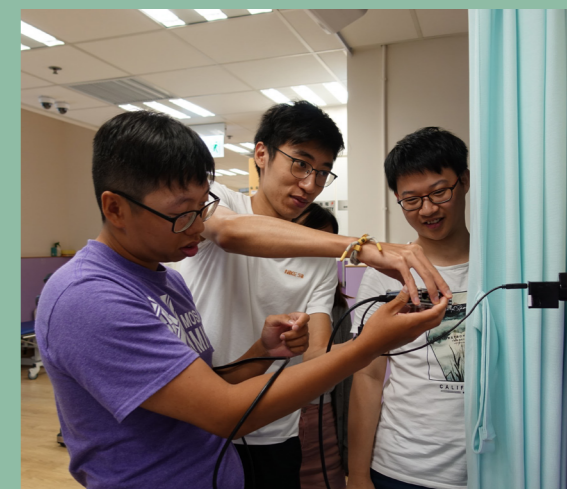
Looking for a solution, the centre reached out to TEDY: Department of Management student CHOI Wing Yee Bobo, along with Department of Electronic Engineering students,

CHAN Tsz Hin Ricky, YUEN Chik Hang Kenny, CHAN Long Yin Anson and WONG Shing Fung Jacky, who had learnt of this problem through TEDY, worked together with the centre since October last year to design a centralised timing system that is low cost, unintrusive, and most importantly, silent.

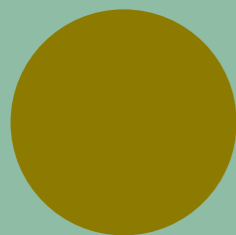
Having ruled out other options, including attaching tracking devices to each elderly attendee, which was recommended against as the elderly did not fancy the idea of wearing even a simple wrist strap, the team settled on a system using NFC (Near Field Communication) tags, a central server, remotes and a display. Named "Quiet Buzzer", this system requires minimal setup and works wirelessly. With NFC tags taking the place of where the timers used to be at each exercise station, the staff can now send a timing request to the server wirelessly as they tap the remote at the tag. All these virtual timers are displayed on a screen or tablet, such that one can grasp the state of all timers in the centre at a glance, eliminating the need for audible timers. Now the staff no longer have to guess which alarm is actually going off.



Ms Katherine LO, the member of staff of the centre who assisted in the implementation of this project, states that the centre is "much quieter" when the system was undergoing testing on site. She adds that while the devices "are small", their impact certainly isn't: without the constant noise in the background, the system has made work easier for the staff and life better for the centre's elderly attendees, allowing them to focus on their rehabilitation exercises. "Many of our elderly attendees's abilities are not what they used to be. Now that they can focus better on rehabilitation, we hope they can at least maintain their current lifestyles."



口耳代眼睛 — 「Talktag」 錄播語音便條 助視障人士自主辨物



「唔該，可唔可以幫我拎張會員卡出嚟呀？」視障人士乘車購物不時遇上無法辨別各式卡片的困境，將手頭卡片全都攤出來，任由他人幫忙分辨，又可能洩露私隱。

早在2017年電子工程學系林雅蔚 (Chloe) 及鄺厚承 (Owen)，聯同機械及生物醫學工程學系的鍾詠霖 (Olive)，透過「無障創客」(TEDY) 計劃到訪香港失明人互聯會之後，著手運用科技知識嘗試作出改善提案。

短短一個月之內，團隊即開發出「語音辨物機」(Talktag) 的雛型。藉著小巧的裝置，用家可以錄播相關的描述和說明。配合近場通信 (NFC) 技術，用家只需在物品加上感應標貼，即可讀取相關的語音紀錄，從而辨別用途。

Chloe 解釋，團隊選用 NFC 技術，務求產品做到「Keep it simple」：一方面考慮到用家視力限制，輕觸較掃描條碼準確；另一方面，NFC技術在八達通應用多時，容易為人理解。

過去兩年間，團隊進行多次實測，又參與多個創新科技比賽和展覽，從中收集各方意見。他們先後推出4、5個版本，體積漸見纖巧。因應用家回饋，最新版本更加入USB Type-C充電頭，並將配上手繩，方便外攜使用。

開發過程，Chloe認為幫助他人固然高興。作為開發方，她亦享受與其他團隊成員交流學習，過程中科研技術和溝通能力均有所提升。成品即將正式發送至各大機構應用，用途不限於視障人士，亦可有助長者辨物。成功感之大，驅使她一直堅持盡善盡美，更贏得家人支持和認同，「屋企人都話，你快啲整出嚟俾嫻嫻用啦」。



背景

不少人的錢包中都放置了各種不同的卡片，如信用卡、八達通及會員卡等。每當我們需要取用時，往往需要花一點時間才能從錢包中取出。這對視障人士 (Visually-Impaired) 尤為困擾。因此，我們設計了這個讀卡器，以幫助他們解決這個問題。

關於讀卡器

我們的讀卡器應用了近場通信 (NFC) 技術，當用家將貼有NFC標籤的卡片靠近讀卡器時，傳感器就可以從NFC標籤中讀取信息 (例如標籤內記錄的訊息編號)。再將這個訊息編號與存儲卡內相應的保存音軌配對並播放，以語音提示用家。

如果標籤尚未有對應的音軌，系統就會將其認定為「未註冊標籤」，再將該標籤的信息錄入。只要用家將新標籤放置在傳感器上，系統將要求他們使用內置的麥克風錄入信息。

設計時的重要考慮元素。讀卡器上印有點字標籤，並在機面上使用了透明物料，與外殼的其他部分形成對比。讀卡器採用圓角平滑的外形設計，尺寸與現代智能手機尺寸相近，亦可以通過USB Type-C充電。

our wallets, and it is an even bigger problem for visually impaired people. It is more easily solved by using a card reader.

Application of Near Field Communication (NFC) technology. When a card is placed against the sensor, the reader can read information (e.g. the tag ID) stored on the card. The information is then matched with the corresponding audio track stored in the device and played back, telling the user the information.

When a card is not registered, the system will identify it as an unregistered tag and prompt the user to record information. As long as the user places the new tag on the sensor, the system will prompt them to use the built-in microphone to record information.

For, which is different from it safe to use in modern times.

Seeing with Sound — “Talktag”, Audio memos helping the visually impaired identify objects

“Can you please help me take out my membership card from my stack of cards?” This is just one of the many situations where visually impaired people have to reach out for help, as they cannot always identify the cards themselves. Without someone trusted always close by, they often risk having sensitive information exposed to strangers.

This project started back in 2017 when Department of Electronic Engineering students Chloe, Owen and Department of Biomedical Engineering student Olive came up with the idea after meeting with the Hong Kong Federation of the Blind through TEDY. Since then they have worked together to solve this problem using technology.

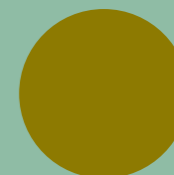
The first Talktag prototype was created in just a month: the portable device could already record and playback audio descriptions. Users just needed to stick an NFC tag on the object they want to identify and they will be able to attach an audio label to the object using Talktag.

As their intended users are visually impaired, the Talktag team chose to implement NFC to “keep it simple”: Tapping the object is easier than accurately scanning a barcode, and it works like the Octopus contactless payment system which is ubiquitous in the city.

In the past 2 years Talktag has gone through a lot: multiple rounds of prototypes and testing, exhibiting in shows and competitions, collecting feedback from different groups. After 4 to 5 hardware revisions, the device has slimmed down considerably.

Now the device includes USB Type-C charging and a strap for ease of use on the go.

Chole remarks that being able to help others is very satisfying. She enjoyed the opportunities to work with and learn from other students in the development process, which improved her own technical and communication skills. Many Talktags will be on the way to the hands of users very soon, through the help of various organisations to distribute them. We expect it to not be help visually impaired people, but also to be of use to the elderly. A sense of accomplishment keeps Chloe moving forward, with her enthusiasm winning the support of those around her. “My relatives keeps asking me to finish it quickly so Grandma can put it to good use.”



TEDY — 三年足跡

TEDY — Three Years

2017

深入探索 Discovery in the community

在計劃初期，TEDY 招募了來自不同學系的城大學生參加這個饒有意義的計劃。他們探訪了各類型的社福機構，透過相處訪談，與受訪人士建立友誼之餘，了解不同人士在生活層面上的難處及需求後，開始著手思考和設計相關的輔助工具。

To kickstart things, TEDY invited students from different departments to visit various organisations serving people with different disabilities and needs. Partnerships were formed and with a deeper understanding of the issues faced by these parties, students started to brainstorm and design assistive devices that could help.

2018

致力研究 Research and development

TEDY 共開展了30多個研究計劃。在一年多的時間內，學生與不同組織機構以及學系通力合作，製作出不同的輔助工具原型。同時，為提升學生的實力，TEDY 曾舉辦多類型工作坊，增進學生對原型製作的認識。

This year saw over 30 prototypes in development under TEDY, where students worked closely with different organisations and departments to construct prototype assistive devices. During this time, TEDY also hosted various workshops in prototyping techniques to equip our students with the skills they need to succeed.

2019

共享成果 Sharing with the community

在計劃的最後一年，TEDY 精選了不同類型的原型設計，深入研發及改良發展成可實際使用的成功作品。同時，我們一直與受惠機構緊密合作，成功將TEDY 作品帶入社區，惠及社群。另外，我們鼓勵學生參加本地及海外的大型設計比賽，屢創佳績，讓學生的作品不同平台發光發亮。

In our final year, TEDY focused its resources into developing select prototypes, polishing them for an eventual release. We continued to work closely with organisations that would directly benefit, delivering successful prototypes into the hands of actual users. We encouraged our students to apply to local and overseas design competitions: they achieved great results and recognition across the globe.

HONG KONG IC

2019 香港資訊

AWARDS PRESENTATION C



2017

06

TEDY
「乜傢伙」設計馬拉松 (2017年六月)
TEDY Makeathon June 2017

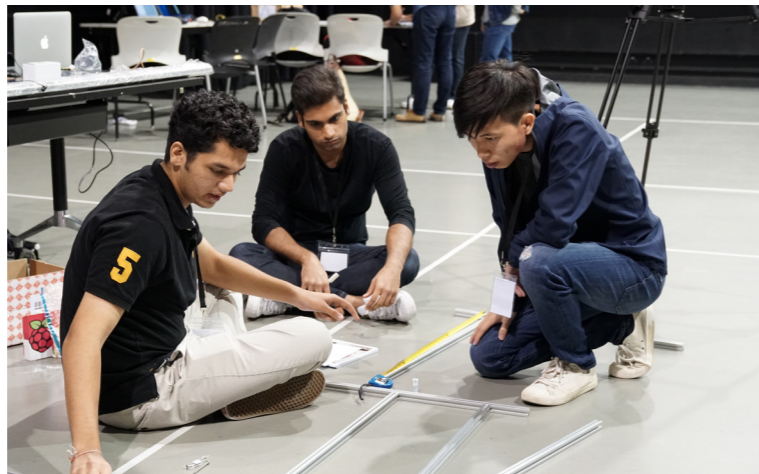


10

城大本科入學資訊日 2017
CityU Information Day

11

TEDY「乜傢伙」設計馬拉松 2017
TEDY Makeathon



06

深入探索
Discovery in the community



2018

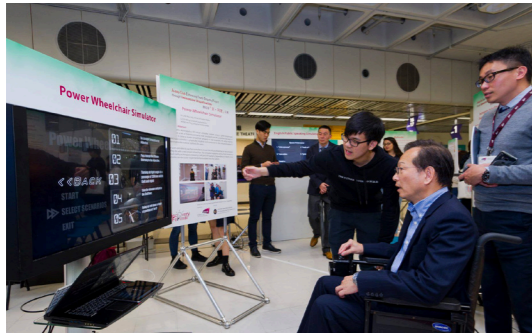
01

賽馬會「見·同理」計劃展覽
Jockey Club Enhancing Youth Empathy
Project through Immersive Visualisation
Exhibition



03

CityU 探索創新節
CityU Discovery Festival 2018



09

加拿大iCAN國際創新創業大賽總決賽
iCAN 2018



09

Maker Faire 2018 New York



TEDY「七傢伙」設計馬拉松
TEDY Makeathon 2018

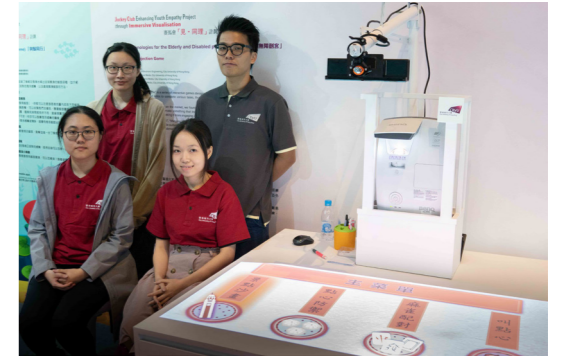
於美國聖路易斯拍攝《與視覺無關》
"See Without Seeing" filming
St. Louis, USA

10

城大本科入學資訊日 2018
CityU Information Day

11

創新科技嘉年華
Innocarnival 2018



樂齡科技博覽暨高峰
Gerontech and Innovation Expo
cum Summit 2018



2019

01

無障創客 x 與鯨同行展覽
TEDY x WOW Showcase



04

CityU Best of The Best Awards
2018

《與視覺無關》放映會
"See Without Seeing" — Screening
in Gallery 360

HKICT Awards Winners Pavilion at
International ICT Expo 2019

香港資訊及通訊科技獎
HKICT Awards 2019



05

「360° VR 虛擬實境」學生體驗工作坊
TEDY — 360° VR Production
Workshops for students



05

商界展關懷社區伙伴合作展
Caring Company Partnership
Expo 2019



08

i-CREATe 2019



06

「360° VR 虛擬實境」教師體驗工作坊
TEDY — 360° VR Production
Workshop for educators



09

無障創客虛擬實境工作坊
TEDY VR Creation Workshop 2019

11

iENA 2019
Nuremberg, Germany



獎項及成就 Awards and Achievements



HONG KONG ICT AWARDS

2019 香港資訊及通訊科技獎

AWARDS PRESENTATION CEREMONY 頒獎典禮

HONG KONG
ASIA'S WORLD CITY 亞洲國際都會
CONNECT AND EXCEL
聯繫全球 競逐卓越

香港特別行政區政府
The Government of the Hong Kong
Special Administrative Region

獎項及成就

Awards and Achievements



CityU Best of the Best Awards 2017

Best Innovation Award

Pineal — Aid for Visually Impaired Bowlers

Best Social Impact Award

Talktag — NFC Audio Labeller for the Visually Impaired

加拿大iCAN國際創新創業大賽總決賽2018

International Invention Innovation Competition (iCAN) 2018

羅馬尼亞投資者論壇特別獎

Special Award of Romanian Inventors Forum

柏金遜症患者安全指示系統智能眼鏡 ISFS Glasses

泰國推動創新及發明協會特別獎

Special Award of Association of Thai Innovation and Invention Promotion

變形輪椅 Transformable Wheelchair

CityU Best of the Best Awards 2018

Best Business Idea

Handance — An alternative occupational therapy game for the elderly

Best Social Impact

Interactive Projection Game

Best Innovation

Low-Cost Central Timing System for Rehabilitation Centres



獎項及成就

Awards and Achievements



2019 香港資訊及通訊科技獎 Hong Kong ICT Awards 2019

學生創新大獎 - 語音辨物機

Student Innovation Grand Award

語音辨物機 Talktag — NFC Audio Labeller for the Visually Impaired

學生創新(大專及本科)獎 金獎

Student Innovation (Post-Secondary and Undergraduate)

Gold Award

語音辨物機 Talktag — NFC Audio Labeller for the Visually Impaired

學生創新(大專及本科)獎 銀獎

Student Innovation (Post-Secondary and Undergraduate)

Silver Award

電動輪椅駕駛訓練模擬器 ProsRoid — The Wheelchair Training Simulator

Times Higher Education THE Awards Asia 2019 Teaching and Learning Strategy of the Year - Shortlisted

第五屆香港大學生創新及創業大賽

The 5th Hong Kong University Student Innovation and Entrepreneurship Competition

二等獎 1st Runner-up

語音辨物機 Talktag — NFC Audio Labeller for the Visually Impaired

i-CREATE 2019

The 13th International Convention on
Rehabilitation Engineering and Assistive Technology
Global Student Innovation Challenge

Bronze Technology

Talktag — NFC Audio Labeller for the Visually Impaired

iCAN 2019

4th International Invention Innovation Competition in Canada

Gold Medal (Preliminary evaluation)

Talktag — NFC Audio Labeller for the Visually Impaired

iENA 2019

International Trade Fair for Ideas, Inventions and New Products

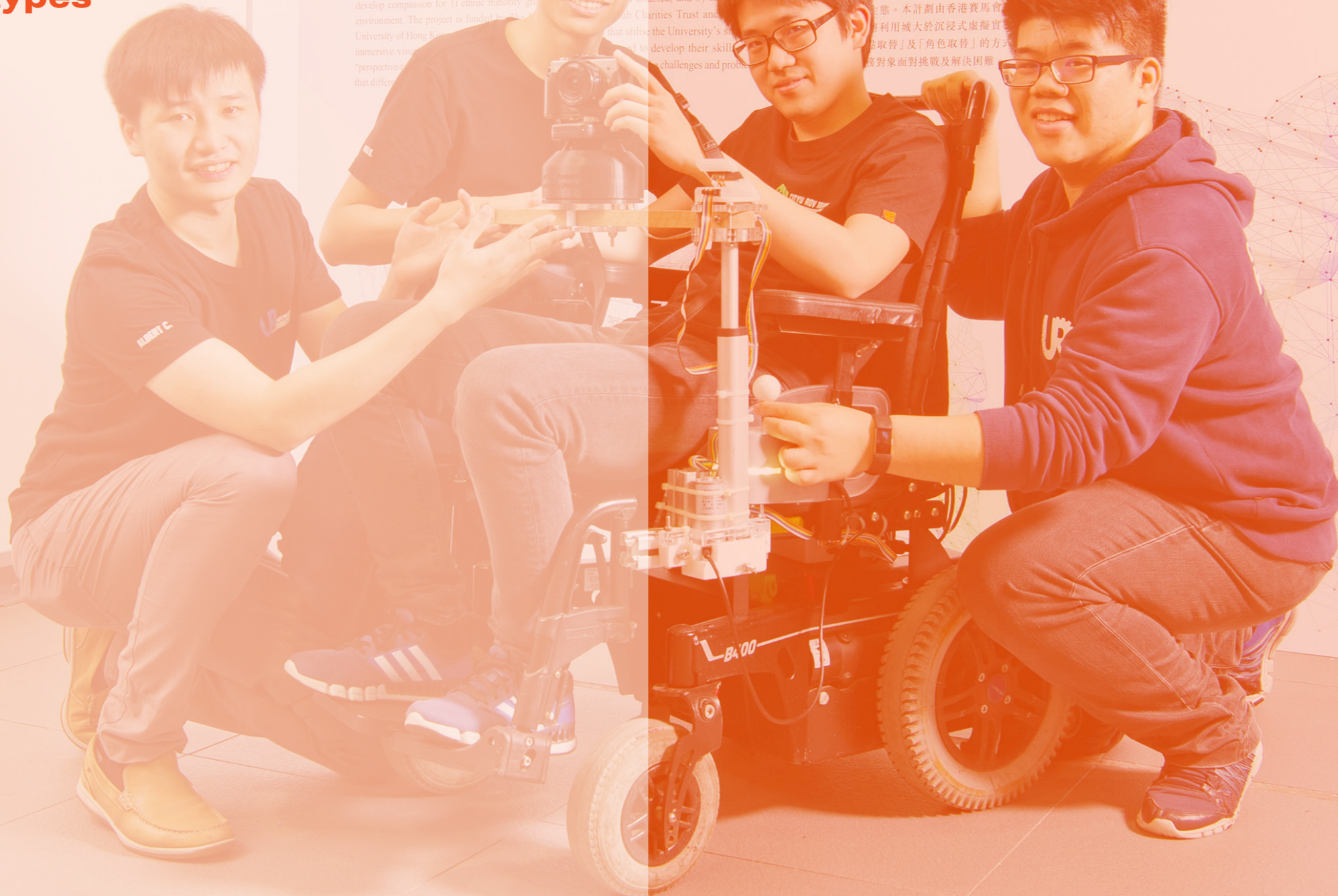
Gold Medal (Invention, University/ College)

ProsRoid — The Wheelchair Training Simulator





原型一覽 Prototypes



Organised by 主辦機構
CityU
香港城市大學
The Hong Kong Jockey Club Charities Trust
香港賽馬會慈善信託基金
Funded by 資助機構
The Hong Kong Jockey Club Charities Trust
香港賽馬會慈善信託基金
Riding High Together

Jockey Club Enhancing Youth Empathy Project through Immersive Visualisation 「見·同理」計劃

EXHIBITION

Jockey Club Enhancing Youth Empathy Project... visualisation enables you... disabled, and 3) ne...
develop compassion for 1) ethnic minority gr... club Charities Trust and...
environment. The project is funded by...
University of Hong Ke... that utilise the University's s...
immersive visu... to develop their skill...
"perspective-s... challenges and probl...
that differ... 務對象面對挑戰及解決困難



Prototypes 原型一覽



ProsRoid — Power Wheelchair Simulator

LO Chi Wing
HUNG Kai Chun



Talktag — NFC Audio Labeller for the Visually Impaired

LAM Nga Wai
CHUNG Wing Lam
KWONG Hau Shing



Mobile App Games: Tic Tac Toe and Jungle (Dou Shou Qi) for Visually Impaired Users

LAM Ming Leong
POON Hei Ching
YIU Chi Pan



Assistive Device to Aid Stroke Survivor to Walk and Hold Umbrella

KWOK Ying
CHENG Yuk Shing
NG Cheuk Lun
PARK Jae-Hyun
PRASAD Vedaang



Assistive Device for Wheelchair User to Protect and Limit Arm Movement

LAM Hei Hung
CHAN Tsz Hin
WONG Kwok Wai
WONG Wui Leung
TANG Kei Tung



Touch-to-Read — Printed Text to Voice Device

YUAN Zichun
SU Xuan
YAO Danqi
WANG Jing



Transformable Wheelchair

LAM Wah Shing
CHAN Tsz Lung



Pineal — Aid for Visually Impaired Bowlers

HARILELA Jayant
KALRA Deepanshu
SIVAKUMAR Srinivas
JAIN Arisht
SHYLA KUMAR Rohit



Tennis-inspired Sound-only Game for Visually Impaired People

TANG Wing Sum



Document Scanning Assistant for the Visually Impaired

AU Ka Ho Chris
SUEN Matthew
MA Kam Leung
HUI Kam Leung
NASSER Arshad



Electronically Assisted Dining Table for Wheelchair User

CHEUNG Tak Sang
LEE Pang Kam
MALHOTRA Akash
YUEN King Fung
LAM Ka Wai



Electric Person Lift for Transferring Wheelchair User

CHEUNG Tsz Yan
CHEN Bin



Playground+

LAU Lok In



Boundary Free

CHEN Wenjia



Proximity Sensor System for Wheelchairs

AU-YEUNG Mei Sze
CHAN Pei Shun
WONG Tsz Ming
YUEN Chik Hang



Automatic Photography Assistant for Wheelchair User

LAM Wah Shing
CHEUNG Yiu Chung
CHAN Peter
SZE Tsz Ho



Wheelchair Single-step Climbing Attachment

OR Chun Wai
FU Tsing Lam



Water Measuring Dispenser for the Visually Impaired

CHAN Tsz Hin
HUI Kam Leung
WONG Yee Ching
LIU Yee Lam

Prototypes 原型一覽



Interactive Projection Games

YEUNG Hoi In
NG Sum Wan
LAW Wai Chung
NG King Kwan



Timer Tracking System for LE Day Training Centre

WONG Shing Fung
CHAN Long Yin
CHAN Tsz Hin
YUEN Chik Hang
CHOI Wing Yee



Handance

XU Jingzhi
ZHOU Guanglei



Elderly Simulator VR

YEUNG Hoi In
NG Sum Wan
LAW Wai Chung
NG King Kwan



Role Playing Table Top Game to Raise Awareness about Elderly with Dementia

MA kam leung
SO Hiu Yung
CHOY Sai Hon
TSE Kwai Chi
LI Hiu LONG



Music Score Reader App for the Visually Impaired

SHAN Ping Keung



See without Seeing

CHAN Cheuk Sze
CHOW Hiu Lam



Wheelchair Battery Health Condition Monitoring Modules

LIU Alex



ISFS Glasses

CHEUNG Yiu Chung
LAI Ho Chi



Indoor-capable Path Tracker App for the Visually Impaired

CHIU Man Sum



Power Wheelchair Anti-Collision System

Tsz Kit YAN



Utility Shopping Crutch

YEUNG Pak To
LAU Siu Hei



Improved Bus Arrival Mobile App and Bus Signalling System

KUNG Cheuk Ying
LI Wanrong
HAI Ting Wai
HUI Kam Leung
SUNG Hiu Tung



Mobile App Game: Chinese Chess for Visually Impaired Users

LAI Lai Yin



Mobile App Game: Mini-Scrabble for Visually Impaired Users

CHOW Sung Hei



Standing Assistive Device — Electrically Assisted Sit to Stand Platform

CHUNG Wing Lam
LEE Hin Yee



Interactive Meeting System for LE Day Training Centre

SHE Ka Chun
TSANG Tsz Ching
TSE Lok Shun
NIDHI Mahejabeen Hossain
WONG Po Ying

Prototypes 原型一覽



Design and Control a
Leg Exoskeleton for
Rehabilitation

CHEUNG Hoi Yin
CHUNG Wing Lam
LAI Ho Wang
YAN Pok Hin



An Electronic Guide
Dog App for the
Visually Impaired

YUNG Min



Localisation in
the MTR for the
Visually Impaired by
Deep Learning

CHAU Tsz Kin



Magic Surface

NG King Kwan
TAM Ming Hong



Smart Medicine Box for
People with
Dementia

CHAN King Lung

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 Hong Kong Blind Union
 Hong Kong PHAB Association
 Hong Kong Federation of the Blind
 Hong Kong Society for the Blind
 The Hong Kong Stroke Association
 Lively Elderly Day Training Centre, CFSC
 Mind-Delight Memory & Cognitive Training Centre, CFSC
 School of Creative Media
 Direction Association For The Handicapped

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 Ms. CHAN Lai Yee
 Mr. CHAN Leonard
 Mr. CHAN Marko
 Dr. CHAN Po Kwok
 Miss CHEN Hester
 Dr. CHEN Ting-Hsuan Cecil
 Mr. CHENG Danny
 Mr. CHEONG Leoson
 Prof. CHONG Ming Lin Alice
 Prof. CHUNG Shu Hung Henry
 Mr. FOK Matthew
 Miss FUNG Chuen Yee Mary
 Dr. HO Derek
 Mr. HO Ka Ki
 Ms. LAI Ka Yi Grace
 Dr. LAI Wai Chiu King
 Dr. LAM Hiu Wai Raymond
 Mr. LEE Kai Chung
 Mr. LEUNG Gary
 Mr. LO Keng Chi Clayton
 Dr. LUK Gar Hon Garry
 Mr. LUK Ka Ming
 Miss MAK Kit Ching Maggie

Miss NG Fion
 Dr. NG Serena
 Mr. NG Ka Lun
 Ms. YEUNG Sze Shun Season
 Mr. SHAM Jay
 Mr. SHING Tony
 Mr. SO Jerry
 Mr. SO Wing Tung Steve
 Dr. TIN Chung
 Miss TSUI Greeny
 Mr. WONG Kwok Wah
 Mr. YU Greeny
 Prof. YUEN Shiu Yin Kelvin

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 Project Manager: Ms. LAM Pui Ying Jessica
 Project Assistants: Mr. CHIM Chi Ho, Mr. HO Yik Tung
 Project Administrator: Mr. CHAN Kelvin

TEDY Magazine

Design: Miss CHOI Stephanie
 Writer: Miss LAI Ka Yi
 Photographer: Miss CHAN Cheuk Sze

Jockey Club Enhancing Youth Empathy Project
through Immersive Visualisation
賽馬會「見·同理」計劃



主辦機構 Organised by



香港城市大學
City University of Hong Kong

捐助機構 Funded by



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

同心·同步·同進 RIDING HIGH TOGETHER