

## Student Innovation Award 學生創新獎

提升資訊素養 Enhancing Information Literacy 培養國家情懷 Cultivating Nationalism

改善社會問題 Solving Social Issues

> 促進身心健康 Promoting Wellness

提升學習成效 Enhancing Learning

Leading Organiser 籌辦機構



## Content 目錄

Background	背景 1
Message from Executive Director of Leading Organiser	籌辦機構行政總監獻辭 2
Message from Chairman of Judging Panel	評審委員會主席獻辭 4
Hong Kong ICT Awards 2024: Student Innovation Award Judging Panel	2024香港資訊及通訊科技獎: 學生創新獎評審委員會
Hong Kong ICT Awards 2024: Student Innovation Grand Student Innovation (Junior Secondary) Gold Award 學生 Student Innovation Best Use of Al Award 學生創新最佳人	創新(初中)金獎
St. Paul's Co-educational College POON Clarisse	Medisafe 7
聖保羅男女中學潘浠淳	藥倍安心
Hong Kong ICT Awards 2024: Student Innovation (Junior 2024香港資訊及通訊科技獎:學生創新 (初中) 獎	r Secondary) Award
Silver Award 銀獎	
Pui Ching Middle School CHAN Chung Hong Meris	Occupational safety guard
香港培正中學 陳頌康	職安保鑣
Bronze Award 銅獎	
St. Teresa Secondary School LO Sing Yui Sanaa / CHAN Ching Yan / CHAN Yee Nam / CHENG Sze Wing	Gondola safety system 12
德蘭中學 勞星蕊 / 陳靖恩 / 陳依楠 / 鄭思穎	銅舟共存
Certificate of Merit 優異證書	
Diocesan Girls' School SO Hei Ching / TANG Long Yan Valerie / LIN Ching Kiu	ReviveMaster 14
拔萃女書院 蘇熙晴 / 鄧朗欣 / 連靖翹	心肺復甦訓練裝置
常····································	

Hong Kong ICT Awards 2024: Student Innovation (Primary) Award 2024香港資訊及通訊科技獎:學生創新 (小學) 獎

#### Gold Award 金獎

HKFYG Lee Shau Kee Primary School

Magic App

15

CHEUNG Sum Wing / LIU Ka Yi / MIU Cheuk Yiu / HO Ching Yu

神奇平台

香港青年協會李兆基小學 張心穎 / 廖嘉兒 / 苗倬堯 / 何婧如

Bronze Award 銅獎

Hong Kong Baptist Convention Primary School

Go Green Recycling Machine

17

香港浸信會聯會小學

CHAN Ching On / LO Hilary

「綠」續有賞回收機

陳靖安/羅希琳

Bronze Award 銅獎

Hong Kong Eng Clansman Association Wu Si Chong Memorial School IP Tze Huen / TANG Cheuk Chun / WONG Sum Laam / CHAN Yu Ching

"Bearier"- Intelligent Flood Barrier

19

僑港伍氏宗親會伍時暢紀念學校

葉梓萱/鄧焯駿/黃心嵐/陳宇晴

「洪出沒」!智能擋水板

Certificate of Merit 優異證書

C.&M.A. Chui Chak Lam Memorial School

Good Partner

21

TANG Hei Yin / SHEK Yee Shuen Scarlett / CHAN Man Chun /

WONG Lok Sum

基督教宣道會徐澤林紀念小學

築君安好

鄧浠妍 / 石鉯鏇 / 陳文縉 / 黃樂心

Hong Kong ICT Awards 2024: Student Innovation (Senior Secondary) Award 2024香港資訊及通訊科技獎: 學生創新(高中)獎

Gold Award 金獎

ELCHK Lutheran Secondary School

A-EYE AI visual impaired shopping assistant

23

MOCHIZUKI Ken

基督教香港信義會信義中學 人工智能視

人工智能視障人士購物助理

望月謙

Silver Award 銀獎

Diocesan Girls' School

WANG Cindy Hing Yu

TSANG Evelyn Wai Ning / CHAN Tsz Nam / LAU Sin Sze Zoe /

DGS Metaverse

25

拔萃女書院

曾慧寧/陳芷楠/劉善思/王馨宇

拔萃女書院教育元宇宙

#### Certificate of Merit 優異證書

CNEC Christian College TSUI Chi Tang 中華傳道會安柱中學

中華傳通管安在中 徐志騰

#### Certificate of Merit 優異證書

Independent Schools Foundation Academy SUN Yuqi / LAU Kan Kenneth

Melbourne Grammer School Richard XU

弘立書院 孫宇琦/劉懃

Melbourne Grammer School 許達宇 RFID Traffic Control System (MPRCS) for Ambulance

基於無線射頻協助救護車的智慧 交通控制系統(MPRCS)

ALICE: ALzheimer's diagnosis and severity IndiCator based on Eye behavior neural network classifier

ALICE: 基於眼部行為神經網路分類器 的阿茲海默症診斷及嚴重程度指標

Hong Kong ICT Awards 2024: Student Innovation (Higher Education) Award 2024香港資訊及通訊科技獎: 學生創新 (大專及高等教育) 獎

#### Gold Award 金獎

Hong Kong Institute of Information Technology, Institute of Vocational Education (Sha Tin)

TSANG Shun Tin / HO Lok Yin / HO Cheuk Hin / CHAN Ka Wing

香港資訊科技學院位於香港專業教育學院(沙田) 曾順天 / 何樂言 / 何卓軒 / 陳嘉穎 AudioSense

以聲知形——基於人工智能的 口述影像生產輔助工具

#### Silver Award 銀獎

Hong Kong University of Science and Technology LEE Cheuk Sum / SO Ho Mang Marcus / WONG Ho Leong

香港科技大學

李焯森/蘇顥萌/黃皓亮

Al-Driven Real Time Sign Language Translate App – HandsTalk

基於人工智能的即時手語翻譯 應用程式 ——手語通

#### Bronze Award 銅獎

The Hong Kong Polytechnic University
YEUNG Kwan Yu / SADMAN Sakib Rabbani

香港理工大學

楊鈞羽 / SADMAN Sakib Rabbani

PayPilot Group Limited

付款導航

27

29

31

33

35

#### Certificate of Merit 優異證書

The Hong Kong University of Science and Technology
CHEUNG Pok To Jason
The University of Hong Kong
CHAN Matthew / NICAM Koustubb / ARRAHAM Jose C

CHAN Matthew / NIGAM Kaustubh / ABRAHAM Jose Christian

香港科技大學

張博滔

香港大學

陳柏衡 / NIGAM Kaustubh / ABRAHAM Jose Christian

**Introduction of Leading Organiser** 

Acknowledgement

QualiFly Education – Al Tutor for Quality Education

飛昇教育——AI 導師成就優質教育

籌辦機構簡介

鳴謝

39

37

40

## Student Innovation Award 學生創新獎



#### Background 背景

The Hong Kong ICT Awards (HKICTA) aims at recognising and promoting outstanding information and communications technology (ICT) inventions and applications, thereby encouraging innovation and excellence among Hong Kong's ICT talent and enterprises in their constant pursuit of creative and better solutions to meet business and social needs.

The HKICTA was established in 2006 with the collaborative efforts of the industry, academia and the Government. Organised by the Digital Policy Office, and led by Hong Kong ICT industry associations and professional bodies, the Awards aims at building a locally espoused and internationally acclaimed brand of ICT awards.

There are eight categories under the HKICTA 2024. There is one Grand Award in each category, and an "Award of the Year" is selected from the eight Grand Awards by the Grand Judging Panel. In addition, in a bid to foster the innovative use of artificial intelligence (AI), each of the eight categories has established a new distinguished accolade: the "Best Use of AI" award, magnifying and honouring outstanding achievements in harnessing the power of AI in respective areas.

EdCity is officially appointed by DPO to be the Leading Organiser of the Hong Kong ICT Awards 2024: Student Innovation Award. The Student Innovation Award covers 4 streams, including Primary, Junior Secondary, Senior Secondary and Higher Education. By drawing on innovative strategies and best practices, EdCity hopes to drive innovation within the awards, fostering an environment that encourages students to push boundaries and think outside the box, and ultimately advance the ICT Industry.

香港資訊及通訊科技獎旨在表揚及推廣優秀的資訊及通訊科技發明和應用,以鼓勵香港業界精英和企業不斷追求創新和卓越,謀求更佳和更具創意的方案,滿足企業的營運需要,造福社會。

通過業界、學術界和政府的共同努力,香港資訊 及通訊科技獎於二零零六年成立。香港資訊及通 訊科技獎由數字政策辦公室舉辦,並由香港業界 組織及專業團體籌辦,目的是為香港建立一個廣 受香港社會愛戴、並獲國際認同的資訊及通訊科 技專業獎項。

2024香港資訊及通訊科技獎設有八個獎項類別。每個類別均設有一個大獎,而最終評審委員會再從八個大獎中甄選出「全年大獎」。此外,為了激發更多人工智能的創新應用,每個獎項類別都增設一個嶄新獎項:「最佳人工智能應用」獎,以彰顯並表揚那些在相關範疇應用人工智能方面取得傑出成就的參賽作品。

教城獲數字政策辦公室正式委任為2024香港資訊 及通訊科技獎:學生創新獎的籌辦機構。學生創 新獎涵蓋小學、初中、高中、大專及高等教育四 個組別。通過採用創新策略和最佳作業方式,教 城期望推動獎項的創新,營造一個鼓勵學生突破 界限、跳出框架的環境,最終推進ICT行業的發 展。

#### Message from Executive Director of Leading Organiser 籌辦機構行政總監斷辭





Mr Ken Ngai Executive Director, Hong Kong Education City

魏遠強先生 香港教育城行政總監

Technology education is a crucial component of the educational development policies in Hong Kong and across the nation, serving as a key driver for technological advancement and social progress.

科技教育是香港以至國家教育發展政策的重要一環,是促進科技進步和社會發展的關鍵。

Hong Kong Education City (EdCity) has consistently kept pace with the times, dedicated to promoting and integrating electronic teaching, and providing comprehensive support for teachers, students, and parents. Technology education is an important part of the educational development policies. In response to the national strategy of fostering science and technology, and to nurture scientific and technological talents, EdCity actively organised the 2024 Hong Kong ICT Awards: Student Innovation Award. This initiative includes a series of themed training workshops aimed at enhancing students' knowledge and boosting their confidence. Furthermore, social elements have been incorporated into the competition themes to heighten students' awareness of social development. EdCity hopes to make good use of this platform to cultivate innovative thinking among students and to continuously advance the development of talent in innovation and technology.

香港教育城(教城)一直以來與時并進,致力提 倡和推廣電子教學並推廣科技的融合,為老師 學生、家長提供多方面的發展支援。科技教 國家教育發展政策的重要一環,為響應科教 國家教育策略,促進培育科技人才,教城積極 2024香港資訊及通訊科技獎:學生創新獎 中舉辦了多場主題培訓工作坊,增進學生知 提升自信,更將社會元素融入比費主題,以 提升 學生對社會發展的關注。教城冀能善用這 日 時,培養更多學生的創新思維,持續推進創科 才的發展。

This year's Student Innovation Award has showcased an impressive catalogue of diversity diverse and high-calibre of entries, many of which reflect a strong sense of social responsibility among the participants. Among hundreds of submissions, numerous projects have sought to address existing societal issues through innovative technology. The products and initiatives span various fields including healthcare, social inclusion, environmental protection, industrial safety, transportation, education, and finance. Many entries have moved beyond theoretical concepts to practical applications. Notable examples include new systems utilising artificial intelligence to reduce medical errors, as well as innovative devices or software designed to provide accessible services for individuals with disabilities. Particularly

noteworthy is the increased enthusiasm from participants in the higher education category compared to previous years, indicating a growing passion for innovative technology among the younger generation. A new generation of stars in the tech field is undoubtedly on the rise.

The success of this competition would not have been possible without the invaluable support from our co-organisations and various supporting organisations throughout the preparation process, enabling greater student participation while providing us with precious insights and resources. We also extend our heartfelt gratitude to the Chief Judge Dr Hubert Chung Yee CHAN, JP and all the judges for their diligent efforts in meticulously reviewing each submission, helping students progress with their hard work. Lastly, we express our special thanks to the Digital Policy Office for their trust and support towards EdCity.

EdCity will continue to fulfil its mission with unwavering commitment to creating an inspiring educational environment, collaborating with all sectors to nurture the future pillars of society. Innovation embodies thea spirit of exploration into the unknown and perseverance in moving forward. We hope that all participants will continue to refine their creations, and to not cease their efforts with the conclusion of this competition, and to persist in contributing to the advancement of innovation and technology. We also look forward to future iterations of the Student Innovation Award reaching new heights, allowing more students to showcase their talents while fostering an atmosphere rich in innovation throughout academia, planting seeds of creativity in every corner of life!

是次比賽的成功,教城衷心感謝協辦及各支持機構在籌備過程中的協助,讓更多學生能夠參與本次賽事,並為我們提供了寶貴的意見及資源;同時感謝首席評審陳重義博士及一眾評審的貢獻,他們不辭勞苦地仔細審閱每份作品,幫助學生進步,勞苦功高。最後亦特別感謝數字政策辦公室對教城的信任和支持。

教城將繼續踐行使命,不遺餘力地構建能夠啟迪 思維的教育環境,與各界攜手培育社會棟樑。創 新是一種勇於探索未知,砥礪前行的精神。我們 期望各位參賽者能夠持續完善自己的創作,不因 比賽的結束而停下腳步,為創科發展貢獻一份力 量;我們也期望未來的學生創新獎能更上一層 樓,讓更多學生一展所長,讓創新創科的氛圍充 斥學界,讓創新的種子播撒到生活的每個角落!

#### Message from Chairman of Judging Panel 評審委員會主席獻辭





Dr Hubert Chung Yee CHAN, JP Chairman & CEO, Hong Kong Communications Company Limited

陳重義博士,JP 香港通訊有限公司主席兼行政總裁

It is a great honour for me to participate in the Student Innovation Award Ceremony as the Chief Judge.

Firstly, I sincerely thank the Digital Policy Office for consistently organising the Hong Kong ICT Awards, providing crucial impetus for nurturing the next generation of tech talent. I also extend my gratitude to HKEdCity for its wholehearted support of this competition. The meticulous organisation of the EdCity has been significant in bringing many outstanding ideas to life.

I would also like to express my sincere gratitude to all the diligent judges, who not only had to read through a huge number of proposals in a tight timeframe, but also scrutinised the design concepts and practical skills of the participants during the five days interviews. In the final round, the judges listened attentively to the presentations from 12pm to 8pm to ensure that each student's work was professionally and fairly evaluated. It is worth mentioning that this year, all assessors and judges took special care to provide detailed feedback and suggestions at every stage. We hope these insights will not only encourage students but also help them expand their knowledge and perspectives, becoming more confident and composed in future competitions.

This year's participants demonstrated a consistently high standard, even surpassing the previous ones, with many impressive mature and practical works. The entrants excelled in knowledge, teamwork, communication, problem-solving, and adaptability, showcasing the potential of Hong Kong's younger generation. Many students demonstrated keen insights into societal needs and a passion for ICT, presenting ideas and innovations that truly captivated us, making it difficult to choose winners. These young students have proven that age is never a barrier to innovation and breakthroughs, we can make remarkable achievements if we think out of the box and believe in ourselves.

大家好,非常榮幸能夠以首席評審的身份,參與 學生創新獎的頒獎典禮。

首先,我要誠摯地感謝數字政策辦公室多年來持續舉行香港資訊及創新科技獎,為培養新一代科技人才提供了關鍵的推動力。我也要感謝香港教育城對這次比賽的傾力支持。我們能在這裏看到多優秀創意化為現實,教城的細心籌備功不可沒。

To conclude, I would like to thank the HKEdCity again for its excellent organisation of the competition and for injecting new elements into the competition to keep it innovative. Also, I would like to congratulate all the participants. I can see the infinite possibilities of the future from you, and I look forward to seeing how you can receive feedback from the judges, continue to research and improve your inventions, and ultimately become the pillars of technological innovation. I hope you will continue to pursue your dreams and fly high with the knowledge and experience you have learnt here! I look forward to seeing you all again next year! Thank you all.

最後,再次感謝香港教育城細心周詳的安排,在 過往的基礎下注入新元素,讓賽事持續革新。同 時,我想祝賀所有參賽同學,從你們身上我看到 未來無限的可能性,我很期待你們可以接收一眾 評審的意見,繼續研究,改進自己的發明,最終 成為引領科技創新的中流砥柱。希望你們能帶着 在這裏所學的知識和經驗,繼續勇敢追夢,展翅 高飛!期待明年賽事與各位再見!謝謝大家。

### Student Innovation Award Judging Panel 學生創新獎評審委員會



#### From Left 由左起:

Prof Chuen Sing YEUNG, JP (Esports Association of Hong Kong, China) 楊全盛教授, JP (中國香港電競總會)

Mr Man Ching, Alex HUNG, MH (Hong Kong New Emerging Technology Education Association) 洪文正先生,MH(香港新興科技教育協會)

Ms Lai Fong, Yvonne WONG (Internet Professional Association) 黃麗芳女士(互聯網專業協會)

Dr Hubert Chung Yee CHAN, JP(Hong Kong Communications Company Limited) Chief Judge 陳重義博士,JP(香港通訊有限公司)首席評審

Prof Franics Yuk Lun CHIN (The University of Hong Kong) Deputy Chief Judge 錢玉麟教授(香港大學)副首席評審

Dr Wilton Wai Tung FOK(Faculty of Engineering, The University of Hong Kong) Deputy Chief Judge 霍偉棟博士(香港大學工程學院)副首席評審

Mr Albert Kin Wai WONG (Association of I.T. Leaders in Education (AiTLE)) 黃健威先生(資訊科技教育領袖協會)

Mr Anthony Kwok Chu LEUNG (Digital Vision Brands Holdings Limited) 梁國柱先生(數字願景控股有限公司)

Mr Ka Tim CHU (Hong Kong Association for Computer Education) 朱嘉添先生(香港電腦教育學會)

## **Student Innovation Grand Award**

## Student Innovation (Junior Secondary) Gold Award and Student Innovation Best Use of Al Award

## 學生創新大獎

## 學生創新(初中)金獎 及學生創新最佳人工智能應用獎

St. Paul's Co-educational College 聖保羅男女中學 POON Clarisse 潘浠淳

https://medisafe.co







#### Medisafe

According to research data, drug prescription errors cause harm or even death to millions of people every year and result in very heavy economic losses. In Hong Kong, it is common to hear news about serious medical incidents caused by mistakes in prescribing medicines by doctors. This is due to two main reasons. First, as doctors are mostly specialists, they may not be able to grasp the details and latest information of all medicine. Second, as doctors are busy at work and have to deal with a large number of patients within a short period of time, it is impossible for them to search for information on each and every medicine before prescribing them, and coupled with mental pressure, they will inevitably make occasional mistakes.

With the development of Artificial Intelligence in recent years, the use of AI to check drug prescriptions may effectively reduce medical errors, and Medisafe was created for this purpose.

Medisafe is a web-based Al software that cross-checks drug information in the drug database with relevant clinical information in the patient database to automatically verify drug prescriptions and detect potential errors based on the

## 藥倍安心

研究數據顯示,藥物處方失誤每年導致數百萬人 受到傷害甚至死亡,並引致非常沉重的經濟損 失。在香港,醫生處方藥物失誤而引起嚴重醫療 事故的新聞也屢見不鮮,主要原因有二。其一 醫生多為專科,未必掌握所有藥物的細節及最 資訊;其二,醫生工作繁忙,需要在短時間內處 理大量病人,不可能在處方前搜尋每種藥物的資 訊,再加上精神壓力,難免偶有疏忽。

近年,隨着人工智能的發展,利用人工智能核對藥物處方或可有效減少醫療失誤,Medisafe正是 為此而生。

Medisafe是一款網頁型人工智能軟體,能夠透過交叉檢查藥物資料庫的藥物資訊與病患資料庫的相關臨床資訊,根據病人的藥物過敏史、長期服用藥物史及臨床情況如肝、腎功能等,自動核對藥物處方,並偵測潛在錯誤。若發現藥物處方或劑量跟病人藥物史或臨床情況有牴觸,會實時發出警示,提醒醫生或藥劑師更改處方。



patient's history of drug allergies, long-term drug use, and clinical conditions such as liver and kidney function. If a drug prescription or dosage is found to conflict with the patient's medication history or clinical condition, a real-time alert will be issued to remind the doctor or pharmacist to change the prescription.

It covers all the 5 areas of common prescription errors made by doctors:

- 1. Detect and flag alert when a patient with known allergy to a certain drug is prescribed the same drug or cross-sensitive drugs in the same class.
- 2. Provide alert and alternative suggestions when a drug with known adverse interaction with an existing drug the patient is currently taking is prescribed.
- 3. Provide alert on wrong dosage, route of administration or frequency of a drug, and check if the drug dosage is appropriate for a patient's age or weight, as well as recommend the correct dosage when necessary.
- Match the drug with the patient's renal and liver function to see if the drug can be prescribed, and if the dosageneeds modification based on renal or liver function.
- 5. Check if the drug prescribed is safe for special conditions of patients, for example, pregnancy, breast feeding, hepatitis B carrier.

Medisafe uses Microsoft Azure Open AI to filter drug prescriptions, integrating patient clinical data with three globally recognised online drug databases (RxList, Drugs.com, WebMD). The databases are comprehensive, containing detailed drug information, similar drugs that may cause drug allergies, cross-drug interactions, required dosage adjustments related to age, weight, renal or hepatic impairment, and contraindications to certain medications in special circumstances such as pregnancy and breastfeeding, ensuring that every query is accurately tailored to the patient's clinical condition.

The software has been tested by doctors and proven to be effective and accurate in screening out medication prescription errors involving different scenarios, including multiple errors, which has a significant positive impact on patient safety and the use of AI technology in improving healthcare. When fully developed, it will be available to private and public clinics and hospitals, not only in Hong Kong, but also worldwide.

By using Al as a gatekeeper for the prescription of medicines, it will help alleviate the healthcare manpower shortage faced by countries around the world. With Al's high-speed automated checking, Medisafe can help busy hospitals and clinics handle large numbers of prescriptions in a short period

Medisafe的保障涵蓋了醫生常見處方錯誤的五個方面:

- 1. 當已知對某種藥物過敏的病人被處方相同的 藥物,或同類別的交叉敏感藥物時,偵測並 標示警示。
- 2. 當處方的藥物與病人目前正在服用的藥物有 已知的不良相互作用時,提供警示和替代建 議。
- 3. 提供藥物劑量、給藥途徑或頻率錯誤的警示,並檢查藥物劑量是否適合病人的年齡或體重,必要時建議正確的劑量。
- 4. 將藥物與病人的肝腎功能相匹配,查看是否可以處方該藥物,以及是否需要根據肝腎功能調整劑量。
- 5. 檢查處方的藥物對特殊狀況的病人,如孕婦、哺乳媽媽、乙型肝炎帶菌者是否安全。

Medisafe 利用 Microsoft Azure Open AI 篩選藥物處方,整合病患臨床資料與具有全球認受性的三大線上藥物資料庫(RxList、Drugs.com、WebMD)。資料庫非常全面,包含詳細的藥物資訊、可能導致藥物過敏的同類藥物、藥物與無所功能損傷有關的所需劑量調整,以及某些藥物在特殊情況如懷孕和哺乳下的禁忌,確保每次查詢都準確針對病人的臨床狀況。

此軟體經過醫生測試,並證實能有效且精確地篩選出涉及不同情況 (包括多重錯誤) 的藥物處方錯誤,對病人的安全以及使用 AI 技術改善醫療保健產生重大的正面影響。開發完成後,不僅在香港,全球的私營和公營診所及醫院都可以使用。

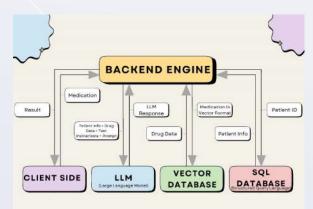
利用人工智能作為處方藥物的把關人,將有助於 紓緩世界各國面對的醫護人手短缺問題。憑藉AI 高速的自動檢查,Medisafe能在短時間內幫助繁 忙的醫院和診所處理大量處方。聯網的性質意味 它可以連接不同的部門或醫院,為在各處接受治 療的同一個病人提供準確的AI輔助。軟體開發完 成後,在給予醫師警示時,也會提供藥物的最新 資訊,讓醫生在開藥時學習。

香港特區政府計劃在不久的將來成立香港的藥物審批機構,並推動香港成為新藥試驗的國際中心。未來,期望Medisafe可與香港藥物監管機構的資料庫連結,為香港的新藥開發與本地及海外病人的臨床使用架起橋樑。

of time. The networked nature of Medisafe means that it can connect different departments or hospitals to provide accurate AI assistance to the same patient receiving treatments from multiple places. Once the software is developed, it will also provide up-to-date information on medications when giving alerts to doctors, so that they can learn more while prescribing medications.

The Hong Kong SAR Government plans to establish a Hong Kong drug regulatory authority soon and to promote Hong Kong as an international centre for new drug trials. In the future, it is hoped that Medisafe will be able to link up with the databases of Hong Kong's drug regulatory authorities, bridging the gap between the development of new drugs in Hong Kong and their clinical use by local and overseas patients.

# 藥物過敏可引致嚴重皮膚 反應,頻度收練或快克。 對解人施成嚴重損傷或甚至死亡 當巴知有過敏反應的藥物或 同類藥物被處方時,軟件會 的非類固節消炎藥物 (Inonsteroidal antiinflammatory drugs e.g., ibuprofen, ponstan, voltaren, acroxia, celebrex)



### Comments from Judging Panel 評審委員會評語

This project originated from the observation and concern of social problems, starting from an excellent idea, based on detailed data collection, full understanding of LLM, SQL, Vector, and deep medical knowledge, and making good use of the drug database, it successfully constructed a very excellent and easy-to-use system. It has been proved by doctors and many clinical patients that the system is effective in assisting doctors in prescribing medication, reducing unnecessary medical financial burden and playing an important role in ensuring medical safety. This project not only focuses on user experience, but also the privacy of the patients, achieving a commercial standard of completion and a predictable future development.

Patient Information

proces

Name

Cender

Mary Chang

Height (cmi)

Body weight (kg)

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Age

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Dosage

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Dating fraquency

Indicat condition

Chronic conditions

Drug allergy

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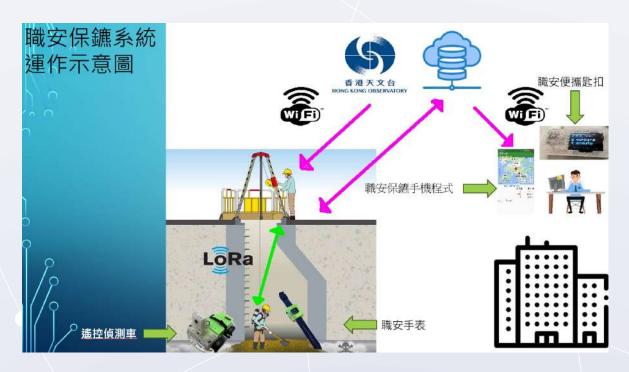
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Special condition

這個項目起源於對社會問題的觀察和關懷,從一個優秀的構思開始,基於詳盡的資料搜集、對LLM、SQL、Vector的充分了解和深入的醫療知識,善用藥物資料庫,成功構建出一個非常出色而且易用的系統。經過醫生和大量臨床病人的證明,這個系統有效協助醫生處方藥物,減少不要醫療經濟負擔,對保障醫療安全起重要作用。這個項目不只關注用戶的實際體驗,也關注病人的私隱安危,在完成度上可謂達至商用級,而且未來發展可期。

# Student Innovation (Junior Secondary) Silver Award 學生創新 (初中) 銀獎

Pui Ching Middle School 香港培正中學 CHAN Chung Hong Meris 陳頌康



## Occupational safety guard

Confined spaces are full of dangers, workers can easily get into accidents or even die in underground pipelines if they do not take proper safety measures. This invention uses a self-developed mobile app, connected to a hand meter and gas sensor via Bluetooth, to collect the user's mobile data and vital signs, and analyse data such as environmental temperature, hydrogen sulphide, carbon monoxide, methane, oxygen content, etc., which are then uploaded to the ThingSpeak website for storage. Managers can remotely monitor the location and status of workers in real time. In case of accidents, the outside world can grasp the golden rescue time to save the workers who are in danger.

#### Product Functions:

- Occupational Safety Watch: Built-in gyroscope to detect the user's vital signs and the user's movement status.
- Gas Sensor: Senses the level of harmful gases and oxygen content in the environment.
- Remote-controlled Detection Vehicle: Carries gas sensors, it can enter confined spaces and sends back real-time images to check various potential risks.

#### 職安保鑣

密閉空間危機四伏,如果沒有做好安全措施,工人在地下管道中很容易發生意外,甚至死亡。這項發明運用自行開發的手機應用程式,透過藍牙連接手錶和氣體感測器,收集使用者移動數據及生命表徵,分析環境溫度、現場環境硫化氫、一氧化碳、甲烷、含氧量等數據,上載ThingSpeak網站儲存。管理人員可以遙距實時掌握工人的位置和狀態。遇上意外,外界能爭取黃金救援時間,營救身陷險境的工人。

#### 產品功能:

- 職安手錶:內置陀螺儀,可探測使用者的生 命體症和使用者的移動狀態。
- 氣體感測器:感測環境中有害氣體的含量和 含氧量。
- 遙控偵測車:運載氣體感應器,取代工人進入密閉空間,傳回即時影像,檢驗各種潛在 風險。



- Occupational Safety Signal Soldier System: Transmits data on workers' vital signs and environmental factors in confined spaces via LoRa and uploads it to a google sheet.
- Occupational Safety Keychain: Downloads data from the Google Sheet database, displays the number of people at work, automatically analyses changes in the data, and raises alerts in case of abnormal situations.
- 職安訊號兵系統:將密閉空間內工人的生命 表徵和環境因素數據,透過LoRa傳遞出密閉 空間,並上傳至google sheet。
- 職安便攜匙扣:從Google Sheet 數據庫下載 數據,顯示工作中的人數,自動分析數據變 動,遇到異常情況就提出警示。









## Comments from Judging Panel 評審委員會評語

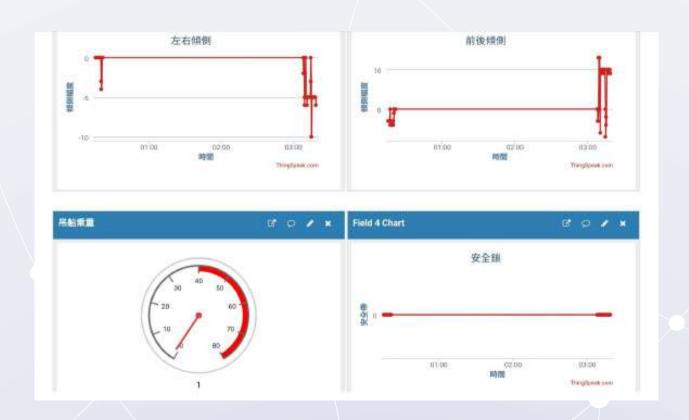
This project aims to tackle the problem of toxic gas and communication black holes encountered in underground pipeline industry by utilising various sensors and LoRa to achieve wireless transmission. The series of supporting equipment is well-conceived and comprehensively considered, which shows that the producer has an inventor's or engineer's mindset, and it is exciting to see what the future holds for it.

這個項目針對地下管道工業意外而設,善用各類感測器及LoRa,達成無線傳輸的效果,以應對地下工作時遭遇的有毒氣體及通訊黑洞問題。一系列的配套設備構思尚算完善,能全面考慮各個層面,可見製作者具發明家或工程師思維,令人期待未來的發展。

# Student Innovation (Junior Secondary) Bronze Award 學生創新 (初中) 銅獎

## St. Teresa Secondary School 德蘭中學

LO Sing Yui Sanaa / CHAN Ching Yan / CHAN Yee Nam / CHENG Sze Wing 勞星蕊 / 陳靖恩 / 陳依楠 / 鄭思穎



## **Gondola safety system**

In recent years, the number of high-altitude accidents in Hong Kong has continuously risen. Professional high-altitude gondola workers receive insufficient attention despite the frequent occurrence of accidents.

In order to enhance the information exchange between high-altitude gondola workers and ground monitors, so as to improve safety and reduce the number of accidents, this project uses the Internet of Things (IoT) device to develop a high-altitude work protection system by using the Micro:bit sensor, circuit design, and a mobile app to track the gondola worker's working condition at high altitude.

#### 銅舟共存

近兩年香港高空工業意外的數字不斷攀升,高空吊船工人這個職業關注度不高,卻意外頻發。

為了加強高空工作環境與地面監察員的信息互通,從以提升高空工作的安全性,減少意外事故,這個方案運用物聯網裝置,以Micro:bit感測器、電路設計及流動應用程式三者配合,開發了一個高空工作保護系統,以追蹤吊船工人在高空的工作狀況。



#### Details:

- The gondola is equipped with a sensory system, which detects the current load capacity of the gondola by means of the HX711 weight sensing module and load elements, which detects the inclination of the gondola by means of a Micro:bit built-in accelerator. When the tilt angle exceeds the safe range, or the weight exceeds the limit, it will stop and issue a warning.
- The safety locking system is designed based on the principle of closed circuit, workers must fasten the safety belt to start the gondola.
- The emergency call button provides safety protection for the gondola workers. In case of accidents, such as heat stroke or discomfort, workers can press the Micro:bit SOS button to call for support.

#### 方案內容:

- 1. 吊船上設有感測系統,以HX711重量感測模 組及荷重元檢測吊船目前的承重量;以 Micro:bit內置加速器檢測吊船的傾斜度。當傾 斜角度超出安全範圍,或重量超過限制範 圍,便會緊急停止及發出警告。
- 2. 以閉合電路的原理設計安全鎖系統,工人必 須將安全帶扣上,才能啟動吊船。
- 3. 緊急呼叫按鈕為吊船工人提供安全保障。當 意外發生,如工人中暑或不適,可按下 Micro:bit求救按鈕呼叫支援。

### Comments from Judging Panel 評審委員會評語

This project addresses the frequent occurrence of accidents in the high-altitude industry and the lack of safety awareness among workers by designing a set of facilities to improve the working environment and ensure safety and stability, which are highly usable for practical application. If data analysis can be used to facilitate the actual operation of the project and to consider the various problems that may arise during the actual operation, it will certainly arouse the safety awareness of the public and the workers, and reduce the losses caused by accidents.

這個項目針對高空工業意外頻發,工人安全意識不足的問題,設計出一套改進工作環境、確保安全穩固的設施,應用實踐可用性高。若配合數據分析促進實際運作,考慮實際操作時可能出現的各項問題,想必能喚醒大眾及工人安全意識,減少因事故造成的損失。

# Student Innovation (Junior Secondary) Certificate of Merit 學生創新(初中)優異證書

Diocesan Girls' School 拔萃女書院 SO Hei Ching / TANG Long Yan Valerie / LIN Ching Kiu 蘇熙晴 / 鄧朗欣 / 連靖翹



左(藍燈): 速度太慢右(綠燈): 深度正確



左(紅燈): 速度太快右(紅燈): 深度太淺



左(綠燈): 速度正確右(綠燈): 深度正確

### **ReviveMaster**

First aid knowledge can save lives in crisis and is very important to everyone. However, Hong Kong does not provide first aid courses for children under the age of 13, so this device is designed to give children an easy way to learn first aid in a short period of time.

In terms of the device's shape, the 3D printed heart-shaped shell is attached to a slingshot, which is connected to an arduino distance sensor that calculates whether the player's pressing depth is sufficiently deep enough to reach 5cm, and whether the pressing speed is between 100 and 120 times a minute. A light bar on the side of the device indicates whether the player is pressing at the correct speed and depth, allowing the player to see the feedback and make immediate improvements.

In terms of software, this device connects the arduino to the unity, and when the player presses the device, an the ambulance man on the street will be shown to stand up on the screen so as to showindicate whether the player has performed CPR correctly or not. At the end of the game, the system also scores the player's performance.

This device is small, convenient and unique. With the game, it can be a quick and easy way to educate children about first aid and popularise first aid effectively.

### 心肺復甦訓練裝置

急救知識可以在危急時拯救生命,對每個人都十分重要,但香港沒有為13歲以下的學童提供急救課程,所以這個裝置旨在讓兒童以輕鬆的方法,在短時間內學習急救。

裝置外形方面,3D打印出來的心形的外殼夾着彈弓,連接着arduino 的距離傳感器,計算玩家按壓深度是否足夠5厘米,按壓速度是否1分鐘100到120次。裝置旁邊配置燈條,顯示玩家是否以正確的速度和深度按壓,玩家看到回饋後可以即時作出改進。

裝置軟件方面,這項發明將arduino連接上unity,當玩家按壓裝置時,熒幕上身處街道的救護員會站起,顯示玩家是否正確地進行心肺復甦。遊戲結尾時,系統也會為玩家的表現評分。

裝置小巧方便,外型獨特,配以遊戲可以快捷地為小朋友提供急救教育,令急救有效地普及化。

# Student Innovation (Primary) Gold Award 學生創新 (小學) 金獎

HKFYG Lee Shau Kee Primary School 香港青年協會李兆基小學 CHEUNG Sum Wing / LIU Ka Yi / MIU Cheuk Yiu / HO Ching Yu 張心穎 / 廖嘉兒 / 苗倬堯 / 何婧如



## **Magic App**

Magic app is designed for the deaf-mute. In daily life, it is difficult for deaf-mute people to express their thoughts in a simple way, and people often cannot understand their sign language, which greatly affects the communication and commute of deaf-mute people. Therefore, this app was created to allow people who do not know sign language to understand the meaning of each sign in order to communicate with the deaf-mute people with the help of this app.

This app is programmed with Pictoblox and Google Al teachable machine. The app contains three parts: sign language teaching, sign language recognition and online Q&A. The purpose of sign language teaching is to help people whodo not know sign language to learn it; sign language recognition can help people who do not know sign language to understand the meaning of sign language through the app; and online Q&A is a place for users to pitch their queries.

## 神奇平台

Magic app為聾啞人士而設計。在日常生活中,聾啞人士難以簡單地表達自己的所思所想,人們也經常無法理解他們所做的手語,大大影響了聾啞人士溝通與出行。因此,這個應用程式的誕生,就是為了讓不懂手語的人能利用此應用程式,明白每個手語的意思,從而和聾啞人士溝通。

這個應用程式運用 Pictoblox 及 Google Al teachable machine 來編程,應用程式內包含三個部分,分別是手語教學、手語識別及線上對話。手語教學的目的是幫助不認識手語的人學會手語;手語識別可以幫助不懂手語的人,透過這App來明白手語的意思;線上對話則是讓使用者表達疑問的地方。



Simply turn on Sign Language Recognition, point the camera at the sign gestures made by the deaf-mute person, the programme will make a sound to inform the user of the meaning of the sign language and display the corresponding text on the mobile phone.

人們只需打開手語識別,用鏡頭對準聾啞人士所做的手語,程式便會發出聲音,通知用家該手語的意思,並在手機上顯示相應的文字。

Through the Magic app, everyone can read the 'voice' of the deaf-mute, gradually eliminating the barrier between the deaf-mute and others, helping them to integrate into society more easily, and become part of an inclusive society.

通過Magic app,大家都能讀懂聾啞人士的「聲音」,逐漸消除與聾啞人士之間的隔膜,助他們更容易融入社會,成為共融社會的一份子。

#### Comments from Judging Panel 評審委員會評語

This app is an effective way to help the public to communicate with the deaf-mute by making sign language understandable to the public. If the app continues to collect more pictures and videos, the sign language dictionary in the app will also be improved, which is a good start to promote an inclusive society.

這個應用程式將手語變為一般人能夠理解的意思,有效協助大眾與聾啞人士溝通。只要繼續收集更多圖片和影片,程式裏的手語詞典也將會更加完善,是促進共融社會的一個好開始。

# Student Innovation (Primary) Bronze Award 學生創新 (小學) 銅獎

Hong Kong Baptist Convention Primary School 香港浸信會聯會小學 CHAN Ching On / LO Hilary 陳靖安 / 羅希琳



## **Go Green Recycling Machine**

The 'Go Green Recycling Machine' and the 'Mobile App' are the two components of this system created to encourage the public to recycle waste. The 'Go Green Recycling Machine' uses VEX IQ robotics and Al lenses to identify the type of items (plastic bottles/aluminium cans/non-recyclable), and then opens the corresponding lids for the users to drop off the recyclable items. A light sensor inside the machine will emit a sound when it detects an item, and a one-time validation code will be displayed on the screen. Users can enter the verification code into the mobile app and accumulate points to redeem rewards. In addition, the distance sensor inside the recycling machine can detect how full the recycling bins are, and the mobile app will also display the status of all the recycling bins in real time.

## 「綠」續有賞回收機

「綠續有賞回收機」及「積分獎賞手機應用程式」兩部分組成了這個鼓勵大眾廢物回收再造的系統。「綠續有賞回收機」運用 VEX IQ 機械人及人工智能鏡頭來識別物品類別(膠樽/鋁罐/不可回收),然後打開相應的蓋供用家投放。機內的光度感應器感應到物件後,就會發出聲響提醒,然後熒幕會顯示一次性驗證碼。用戶可以在手機應用程式上輸入驗證碼,累積積分以兑換獎官會收箱的滿載程度,手機也會同步顯示所有回收箱的狀態。



The objective of the 'Go Green Recycling Machine' is to:

- Increase the public's motivation to recycle and cultivate the habit of recycling.
- Slow down the rate of landfill saturation and reduce environmental pollution, greenhouse effect and global warming.
- Recycle any types of plastic bottles and aluminium cans, including plastic bottles without labels, to improve the Government's bottle-collecting machines.
- Educate the public on the benefits and importance of recycling through the green information in the app.

#### 綠續有「賞」回收機的目標:

- 提高市民對回收的動力,培養回收習慣。
- 減慢堆填區飽和的速度,減輕污染環境、温 室效應和全球暖化的問題。
- 任何膠樽和鋁罐都可以被回收,包括無招紙 膠樽,有助改善政府的入樽機。
- 透過應用程式內的環保資訊,教導市民環保 回收的好處和重要性。



## Comments from Judging Panel 評審委員會評語

This project presented a good concept of feasible ways to improve the existing recycling equipment. Students demonstrated excellent problem-solving skills by making good use of different IT tools to come up with creative solutions to the connectivity problems between the recycling machines and the supporting applications.

這個項目針對現有回收設備的不足之處,提出了可行的改善方法,概念不俗。就回收機和配套應用程式之間的連接問題,同學善用不同的IT工具,構思出具創意的解決方法,展現出優秀的解難能力。

# Student Innovation (Primary) Bronze Award 學生創新 (小學) 銅獎

Hong Kong Eng Clansman Association Wu Si Chong Memorial School 僑港伍氏宗親會伍時暢紀念學校

IP Tze Huen / TANG Cheuk Chun / WONG Sum Laam / CHAN Yu Ching 葉梓萱 / 鄧焯駿 / 黃心嵐 / 陳宇晴



## "Bearier"- Intelligent Flood Barrier

In recent years, Hong Kong has been experiencing a series of extreme weather condition, and people are increasingly affected by heavy rainfall and flooding. To help the public effectively prevent disasters, this product enhances the performance of the existing water barrier by designing a water barrier that can automatically rise and fall in response to the real-time changes in water level. Users do not have to be present at the flood site, but can still effectively block the unpredictable flooding into the room, reducing the safety risk and property damage caused by flooding.

### 「洪出沒」!智能擋水板

香港近年接連出現極端天氣,市民受暴雨及洪水的影響日趨嚴重。為了幫助市民有效防災,這個產品能提升現時擋水板的效能,設計能因應實時水位變化而自動升降的擋水板。用家不用置身於現場,也可有效阻截變化莫測的洪水湧入室內,減少因洪水淹浸而帶來的安全風險和財物損失。



#### Product Functions:

- Intelligent flood barrier can sense the water level outside the building in real time and adjust the height automatically, which can simplify the process of disaster relief and prevent users from encountering dangers when manually setting up the flood barrier.
- 2. Intelligent flood barrier has a curved top, which is tested to be the best water barrier shape.
- 3. Intelligent Flood Barrier can be installed under the ground for easy access and aesthetics purposes.

#### Product Highlights:

- 1. Simplify the process of disaster relief: the Government does not need to send people to help victims set up water barriers whenever floods come.
- 2. High value of technology application: can be installed in various places such as homes, shops and MTR stations.
- Contribute to the development of Hong Kong as a smart city: water level sensors can measure water level more accurately than traditional hydrological scales. The water level data collected can be used to analyse river conditions and to plan for flood prevention, irrigation, and water supply.

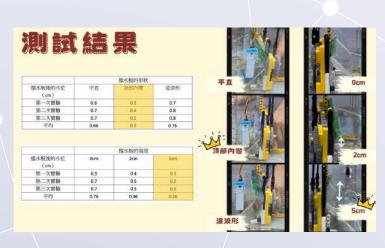
#### 裝置功能:

- 1. 智能擋水板能實時感測建築物外的水位,並 自動調節高度,能簡化救災過程,並避免使 用者在人手設置擋水板時遇上危險。
- 2. 智能擋水板呈頂部彎曲狀,經測試後為最佳 擋水形狀。
- 3. 智能擋水板可安裝於地底,方便出入又美觀。

#### 產品優點:

- 簡化救災過程:政府不用每逢洪水來臨都要派人協助災民設置擋水板。
- 2. 科技應用的價值高:能設於家居、商店及地 鐵站等多個地方。
- 3. 促進香港的智慧城市發展:水位感測器較傳統水文尺更能精準測量水位。收集所得的水位數據可用作分析河流狀況,規劃防洪、灌溉、供水等設備。





## Comments from Judging Panel 評審委員會評語

This project focuses on the actual difficulties encountered by the public during rainstorms and floods. The research spirit of this project should be appreciated as it involves site visits and interviews, as well as the construction of a clear model to find out the parameters that should be used in the production of an automated flood barrier through repeated wave simulations. Afterwards, students can think about how to install the flood barrier in the real environment, so that the model can be turned into a practical product.

這個項目針對市民在暴雨及洪水時實際遇見到困難,進行了實地考察和訪問,並建造了清晰的模型,通過多次的海浪模擬,找出製作自動擋水板應使用的參數資料,其研究精神值得欣賞。之後可思考在實際環境下該如何安裝擋水板,將模型變為實用的產品。

# Student Innovation (Primary) Certificate of Merit 學生創新 (小學) 優異證書

C.&M.A. Chui Chak Lam Memorial School 基督教宣道會徐澤林紀念小學 TANG Hei Yin / SHEK Yee Shuen Scarlett / CHAN Man Chun / WONG Lok Sum 鄧浠妍 / 石鉯鏇 / 陳文縉 / 黃樂心



#### **Good Partner**

According to the data released by the Hong Kong Housing Authority and the Housing Department in 2023, about 14,000 accidents occurred on construction sites from 2019 to 2023, which were mostly caused by the lack of proper safety measures. Therefore, the invention of the 'Good Partner' aims to protect workers from injuries and reduce accidents at construction sites.

#### 築君安好

根據香港房屋委員會及房屋署在2023年公布的數據,2019至2023年期間,工地發生了約14,000次意外,其中很多都是因為沒有做好安全措施而造成的。因此,發明「工人智能安全帽」的目的便是令工人在工地免受傷害,減少意外。



#### **Product Functions:**

- There is a detection device on the cap rope to check whether the worker's helmet rope is properly tied. If the helmet is not properly fitted, the lamp will light up and produce an audible warning.
- 2. Use motion sensor to determine whether the worker will fall or faint.
- 3. An emergency help button is provided so that if a worker feels sick or has an accident, he/she can press the button directly to notify the supervisor to come and help.
- 4. If there any of the above emergencies happen, or if the helmet has not been worn correctly for a period of time, a message will be sent to the supervisor through the IOT for follow-up.

#### Product Highlights:

- 1. Workers do not need to learn how to use it, just fasten the strap as they do with a normal helmet and the system will operate automatically.
- 2. The device is very lightweight and does not pose a weight burden on the wearer.
- 3. The emergency button is in the centre of the round micro-computer and can be easily reached by the worker.
- 4. In case of emergency, safety officers can provide quick support to enhance work efficiency.

#### 裝置功能:

- 1. 帽繩上有偵測裝置,檢查工人的安全帽繩有 否綁好。如沒有正確佩戴,安全帽會亮燈並 發聲作提醒。
- 利用運動傳感器來判斷到工人會否跌倒或量 倒。
- 3. 設有緊急求助按鈕,如工人感到不適或出現 意外,可直接按下按鈕,通知主管到場協 助。
- 4. 如有以上的緊急狀況,或持續一段時間沒有 正確佩戴安全帽,會透過物聯網發送訊息通 知主管跟進。

#### 產品優點:

- 1. 工人無需特別學習使用方法,如平常安全帽 般扣好帶子,系統就會自動運作。
- 2. 設備十分輕巧,不會對配戴的工人構成重量 負擔。
- 3. 緊急求助按鈕設於圓形微電腦的正中央,工 人能輕易觸及。
- 4. 如遇緊急情況,安全主任能快速支援,提升 工作效益。





# Student Innovation (Senior Secondary) Gold Award 學生創新(高中)金獎

ELCHK Lutheran Secondary School 基督教香港信義會信義中學 MOCHIZUKI Ken 望月謙



## A-EYE AI visual impaired shopping assistant

Shopping, including product identification, payment and navigation, is a great challenge for the visually impaired persons. They often have to rely on the assistance of other people, which creates tremendous psychological pressure for them. Therefore, this project employs both hardware and software technologies to assist the visually impaired to shop independently.

In terms of hardware, it uses a microcomputer, wireless charging and wireless image transfer technology. In terms of software, it uses the latest image recognition technology, self-developed analogue sound navigation and voice recognition technology, additionally providing a mobile app version. The device or app will capture and process images in real time through the front camera, use image recognition models to identify objects, and provide voice navigation to help users find the target area.

## 人工智能視障人士購物助理

購物,包括產品識別、付款和導航,對視障人士 來說是一個很大的挑戰,往往需要依靠其他人的 協助,這對他們造成巨大的心理壓力。因此,這 個項目同時採用了硬件和軟件技術,協助視障人 士完全自主購物。

在硬件方面,它使用了微型電腦、無線充電和無線圖像傳輸技術。在軟件方面,它採用了最新的圖像識別技術、自主研發的模擬音效導航和語音識別技術、並提供手機應用程式版本。此裝置或應用程式會通過前置攝像頭,即時捕捉和處理圖像,利用圖像識別模型識別物品,並提供語音導航,幫助用戶找到目標區域。



After putting on the device, the visually impaired person can use gestures to activate the voice recognition function of the device. Simply by telling the device the product they want to buy or the area they want to go to, the device will lead the user to the target area through the voice and analogue sound system, and to find out where the target product is located at through the orientation of the finger. At checkout, it can also recognise the number of cash held by the user and assist the visually impaired to make purchases on their own. The user can cancel or change the target product, or search for multiple products at the same time, and the device will also suggest the user to buy the more cost-effective products.

視障人士佩戴裝置後,便可以透過手勢喚醒裝置 的語音識別功能,只需告訴裝置想購買的商品或 者想前往的區域,裝置便會透過語音和模擬手 系統,帶領使用者前往目標區域,並且透過手指 的方位,找出目標商品所在的位置。在結帳時也 可以識別用家持有的鈔票數目,以協助視障,也可 自主購物。用家可以取消或更改目標商品, 與同時尋找多項商品, 裝置也會建議用家購買性 價比較高商品。



## Comments from Judging Panel 評審委員會評語

The producer of this project is socially responsible, understands the core issues of society and the target audience, and has the potential to be a scientist in terms of thinking, execution and interpretation. The multi-platform concept of using a physical device or installing an app on a mobile phone is appreciated. This invention is very useful in addressing the practical social and lifestyle needs of the visually impaired. If the Al can be trained to collect more data for analysis, it will have huge market potential.

這個項目的製作者富有社會責任感,非常理解社會和目標對象的核心問題,從思路、執行到演繹都具備科學家潛質。用家可以按自己的需要,或在手機上安裝應用程式,多平的概念也值得欣賞。這項發明能協助解決視訓練公也值得於當事,非常實用。若能訓練AI收集更多數據分析,將會擁有巨大的市場潛力。

# Student Innovation (Senior Secondary) Silver Award 學生創新(高中)銀獎

## Diocesan Girls' School 拔萃女書院

TSANG Evelyn Wai Ning / CHAN Tsz Nam / LAU Sin Sze Zoe / WANG Cindy Hing Yu 曾慧寧 / 陳芷楠 / 劉善思 / 王馨宇



#### **DGS Metaverse**

This is an educational meta-universe based on Diocesan Girls' School, designed to provide an immersive educational experience. The meta-universe combines Al dialogues, videos and interactive elements to teach students about Python programming, the Unity game engine and other subject knowledge. The meta-universe is built in the Unity engine and written in C# to create realistic and practical scenarios. By touching different media, students can watch instructional videos or read text to learn about the subjects. The Al in the meta-universe can answer students' questions in different knowledge areas and help them solve problems instantly. In addition, different virtual facilities can interact with students, making the learning process dynamic and interesting, stimulating their passion for learning.

#### DGS Metaverse has four main functions:

Python Learning Centre: Provides a step-by-step journey into Python programming. Students can access comprehensive learning materials, video tutorials, code samples and exercises, and receive personalised guidance from Al tutors powered by the ChatGPT API.

## 拔萃艾書院教育元宇宙

這是一個以拔萃女書院為基礎背景的教育元宇宙,旨在提供身歷其境的教育體驗。元宇宙融內了人工智能對話、影片教學以及互動式元素,教導學生Python編程、Unity遊戲引擎及更多科目內容。該元宇宙由Unity引擎製成,並利用C#編寫內容。該元宇宙由Unity引擎製成,並利用C#編寫同數場分,能夠觀賞教學影片或閱讀文字資料,了解對學生在不同知識領域的問題,即時幫助他們解決難題。此外,不同的虛擬設施也能與學生互動,使學習過程變得生動有趣,激發他們的學習熱情。

#### 元宇宙現有四項主要功能:

Python 學習中心:提供循序漸進的 Python 程式設計學習旅程。學生可以使用全面的學習資料、視訊教學、程式碼範例和練習,並接受由 ChatGPT API 驅動的 AI 教師提供的個人化指導。



Unity Learning Centre: Offers resources for learning game mechanics, C# scripting, asset creation, and environment building. Students learn to create parkour games by watching video tutorials and examples, while Al instructors answer questions and provide guidance.

Unity 學習中心:提供學習遊戲機制、C# 腳本、資產製作和環境建設的資源。學生透過觀看影片教學與實例,學習製作跑酷遊戲,AI 教師也會回答問題並給予指導。

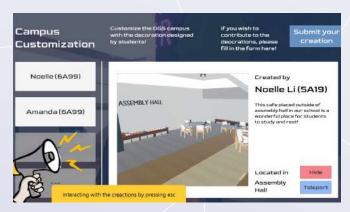
Geography Learning Centre: A virtual desert environment is set up to demonstrate the effects of desertification. Students can explore the virtual desert and learn about the consequences of deforestation, which can raise their awareness of environmental protection.

地理學習中心:設有虛擬沙漠環境,直觀展示沙 漠化前後的影響。學生可以探索虛擬沙漠,了解 砍伐森林的後果,提高環境保護意識。

Campus Customisation: Students can submit their own creations to customise the decoration of the DGS campus. This not only encourages students to express their creativity and individuality by creating a more appealing learning environment, but also provides students with hands-on experience in Unity environmental design.

校園自訂功能:學生可提交自己的創作,為 DGS 校園自訂裝飾。這不但鼓勵學生表達自己的創意 和個性,創造更吸引人的學習環境,也為學生提 供了 Unity 環境設計的實際經驗。





### Comments from Judging Panel 評審委員會評語

This project has successfully transformed the Diocesan Girls' School campus into a virtual world, providing an optional, fun way for students to learn. If it can be expanded with more interesting subjects and improved with features such as picture insertion, voice system, etc., it will have the potential to compete in the market.

這個項目成功將拔萃女書院的校園轉換到虛擬世界中,為學生提供了一種可選的,有趣的學習方式。如果可以擴展更多有趣的科目,並完善插入圖片、語音系統等功能,將能夠擁有面對市場競爭的潛力。

## **Student Innovation (Senior Secondary)** Certificate of Merit 學生創新(高中)優異證書

## CNEC Christian College 中華傳道會安柱中學 TSUI Chi Tang 徐志騰

### **Our Solution: Ambu Flow**

#### **Reward Function:**

MPRCS(Max Pressure with Remaining Capacity of Surrounding Lane) (eq.1) was proposed in this project. Taking surround lanes into

consideration, avoiding the phenomenon that vehicles cannot completely pass the intersection due to limited outgoing lane capacity.

$$P_i = N_{in} * (1 - W_f * \frac{C_f}{Cap_f} - W_l * \frac{C_l}{Cap_l} - W_r * \frac{C_r}{Cap_r})$$
 Eq.1 Calculation of Pressure

- $P_i$  represents the pressure of the traffic movement i
- ullet  $N_{in}$  represents the number of vehicles on the incoming lane
- ullet  $W_{f,l,r}$  represents the weight of forward, left and right direction
- ${}^{ullet}C_{f,l,r}$  represents the number of vehicles on the outgoing forward, left and right lane
- ullet  $Cap_{f,l,r}$  represents the maximum capacity of the outgoing lane forward, left and right

We aim for the lowest overall pressure inside the junction, hence the total reward R for an action could be represent by:

$$R = \sum -P_i$$
 Eq.2 Calculation of Reward

#### DQN:

- Aims to maximize long-term cumulative rewards
- (e.g. increasing the overall average speed of cars)

  Handles Large State Spaces/ Multiple Observation Data (e.g. number of cars at each junction throughout the entire road network)

Fg 3 Q-learning function

 $^{w}(S_{t}, A_{t}) = (1 - \alpha) * Q(S_{t}, A_{t}) + \alpha * (R_{t+1} + \gamma * maxQ(S_{t+1}, A_{t+1}))$ 

#### LLM (Large Language Models):

Extracting useful information from ambulance calls

Patient: Hi. I need an ambulance. I'm experiencing sudden and severe shortness of breath, chest pain, and I'm coughing up blood. I'm worried it might be a pulmonary embolism.

#### Output:

'symptoms": "Shortness of breath, chest pain, coughing up blood" "disease": "Possible pulmonary embolism", "severity": 10, "golden\_time": 10

#### Car Recognition Method:

Using RFID(Radio Frequency Identification) for car counting + Ambulance detection on roads.

### **RFID Traffic Control System (MPRCS) for Ambulance**

Traffic congestion is not only a waste of time and productivity, but also has a negative impact on the environment.

MPRCS can avoid the problem of vehicles failing to cross the intersection completely due to the limited capacity of the exit lanes. MPRCS also has a special green light priority feature for emergency vehicles. Using RFID as the vehicle counting method combined with the MPRCS algorithm, the intelligent traffic light system hopes to reduce traffic congestion and shorten the arrival time of ambulances and other emergency vehicles by using a machine learning model to vary the length and pattern of the traffic lights.

## 基於無線射頻協助救護車的智慧交通 控制系統 (MPRCS)

交通擁塞不僅浪費時間與生產力,也會對環境造 成負面影響。

MPRCS能夠避免車輛因為出口車道容量有限,無 法完全通過十字路口的問題,還特別設置了對緊 急車輛的綠燈優先通行功能。此智慧型交通燈系 統利用 RFID 作為車輛計數方法,並結合 MPRCS 演算法,希望透過機器學習模型改變交通燈的長 度與模式,以減緩交通擁塞,並縮短救護車與其 他緊急車輛的抵達時間。



The Intelligent Traffic Signal System was tested using two simulated maps, namely the Sha Tin New Town and the 3x3 Grid Map. The test results show that the system has made significant improvements in reducing traffic congestion, as well as shortening the arrival time of ambulances and general vehicles. The average vehicle travelling speed increased by 60.7% and travelling time reduced by 38.7%. The average travelling time of an ambulance on a 3-kilometre journey was reduced by 62.9%.

智慧型交通燈系統已在沙田新市鎮及 3x3 網格地圖兩個模擬地圖進行測試。測試結果顯示,該系統在減少交通擁塞、縮短救護車與一般車輛抵達時間方面有顯著改善。車輛平均行駛速度提高了60.7%、行駛時間減少了38.7%。救護車在3公里行程中的平均行駛時間減少62.9%。

By improving traffic flow and minimising delays at junctions, the system effectively mitigates the economic losses, carbon emissions and potential loss of life associated with traffic congestion. In addition, the system's focus on prioritising emergency vehicles ensures that vital medical assistance reaches those in need faster.

透過改善交通流量,並將路口的延遲時間降至最低,此系統可有效緩解與交通擁塞相關的經濟損失、碳排放以及減少潛在的生命損失。此外,此系統注重緊急車輛的優先順序,可確保重要的醫療援助能夠更快地送達至有需要的人。

	Overall Throughput	Average Number of Cars in Network	Average Speed	Average Travelling Time (seconds)
Fixed Timing	15292	303	31.39km/h	250.94s
RFID (Previous Work)	15735	211	45.94km/h	176.73s
PD Light	16844	178	49.83km/h	170.56s
MPRCS (OURS)	16813	154	50.45km/h	153.77s

#### Table1: Performance In Handling Traffic

	To Tai Chung Kiu Road	To Wo Che Shopping
Fixed Timing	351.9s (5.9min)	320.5s (5.3min)
RFID (Previous Work)	161.2s (2.7min)	169.2s (2.8min)
PD light	202.3s (3.4min)	223.8s (3.7min)
MPRCS (OURS)	145.3s (2.4min)	149.5s (2.5min)

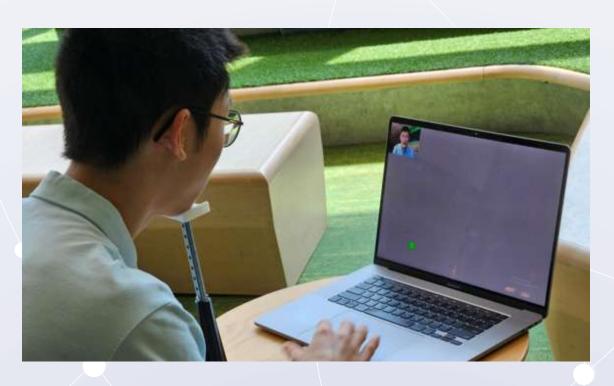
Table2: Average Travelling time of ambulance

	RIFD	Camera	Inductive Loops
PROS	Relatively Cheap     Robust & Stable     Easy for     installation	Long Detection Range	Stable
CONS	Relatively short detection range(10m-100m)	Relatively     Expensive     Accuracy     easily affected     by weather     Strict camera     position     required	Poor Detection of Small Vehicles     Requires reconstruction of roads

# Student Innovation (Senior Secondary) Certificate of Merit 學生創新(高中)優異證書

## Independent Schools Foundation Academy 弘立書院 Melbourne Grammer School

SUN Yuqi / LAU Kan Kenneth 孫宇琦 / 劉懃 Richard XU 許達宇



## ALICE: Alzheimer's diagnosis and severity IndiCator based on Eye behaviour neural network classifier

In Hong Kong, up to 85% of people with Alzheimer's disease may not be able to receive appropriate care after diagnosis. Therefore, a way to diagnose Alzheimer's disease at an early stage is very important, which will enable more patients to take appropriate treatment or prevention before the symptoms start to affect their daily lives.

ALICE is an indicator based on eye behaviour neural network classifier designed to predict Alzheimer's disease through changes in a patient's eye behaviour. ALICE uses neural network technology to analyse many Alzheimer's patients' data to predict the likelihood and severity of Alzheimer's disease. It is an effective, remote, and non-invasive early screening test for Alzheimer's disease.

## ALICE: 基於眼部行為神經網路分類器的阿茲海默症診斷及嚴重程度指標

在香港,高達85%的阿茲海默症患者可能無法得到診斷後的適切護理。因此,在早期就能診斷阿茲海默症的方法極為重要,這可以使更多患者在症狀開始影響日常生活之前,採取適當的治療或預防。

ALICE是一款基於眼部行為的神經網路分類器,旨在透過患者眼部行為變化來預測阿茲海默症的軟體。ALICE利用神經網路技術,分析大量阿茲海默症患者的數據,從而預測患者罹患阿茲海默症的可能性和嚴重程度,是一種有效的,遠端非侵入性的阿茲海默症早期篩檢測試。



ALICE can be used anytime, anywhere, by anyone, with a device that has a camera and an Internet connection. To use ALICE as a predictive tool, users can simply browse the website and take a test that takes only five minutes. Immediately after the test, users will receive a detailed report of their performance on a variety of indicators. The report indicates the possibility of the user having developed Alzheimer's disease. If the user has already been diagnosed with Alzheimer's disease, ALICE can also indicate its severity through diagnostic tests. Patients can use this report to seek external professional medical help if necessary.

只要有一台具備攝影及網絡連接功能的裝置,任何人都可以隨時隨地使用ALICE。若要使用ALICE作為預測工具,使用者只需瀏覽網站,並進行僅5分鐘的測試。測試結束後,使用者會立即獲得一份詳細報告,其中包括他們在各種指標上的可說。報告中會指出使用者罹患阿茲海默症的可能性。如果使用者已經被診斷出患有阿氏症,ALICE也可以透過診斷測試,指出其嚴重程度。患者可根據此報告,在需要時尋求外部專業的醫療協助。



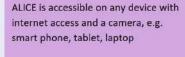
#### Accurate

ALICE can produce results instantly after testing, and each test will require less than 5 minutes



#### Accelerated

ALICE can track disease progression over time to help caregivers and doctors assess elderly long-term

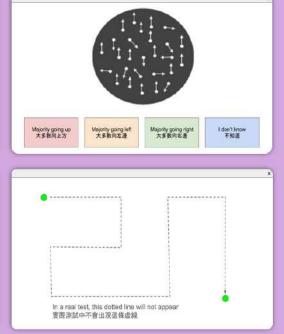


Accessible



Now a calibration test will start, please position your chin on the support stand. Do not move your head during the test. Calibrate the eye tracking software by clicking on each of the yellow dots until all the dots turn red.

现在將開始校準測試. 請終下巴放在支撐架上。測試過程中不 要移動頭部。透過點擊每個黃點面到所有點變成紅色來校準眼 酶追推系統。



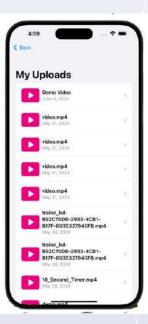
## Student Innovation (Higher Education) Gold Award

## 學生創新 (大專及高等教育) 金獎

Hong Kong Institute of Information Technology, Institute of Vocational Education (Sha Tin) 香港資訊科技學院位於香港專業教育學院(沙田)

TSANG Shun Tin / HO Lok Yin / HO Cheuk Hin / CHAN Ka Wing 曾順天 / 何樂言 / 何卓軒 / 陳嘉穎









#### **AudioSense**

AudioSense is an Al-driven audio description platform designed to streamline the creation of audio descriptions for visually impaired individuals. The system leverages cutting-edge AI technologies, including AI Video Accessibility Assessment, Al Movie Scene Analysis, and Al Script Composition Assistance, to utilize machine learning models trained on diverse datasets, such as online videos, news videos, and audio-described videos, with the intention to provide high-quality descriptive audio. Additionally, AudioSense integrates cloud infrastructure for scalable and efficient processing, and provides user-friendly mobile and web application interfaces that support seamless video uploading and script editing. This project also incorporates accessibility features, including voice control and compatibility with Siri on iOS devices, enhancing inclusivity and ease of use.

## 以聲知形——基於人工智能的口述影像生產輔助工具

以聲知形是一款基於人工智能的口述影像生產輔助工具,旨在簡化口述影像的製作過程。以聲知形基於人工智能的影片分析、腳本創作輔助和文本轉語音轉換功能,利用在多樣化數據集上訓練的機器學習模型,保證高質量的口述影像描述。此外,以聲知形集成了雲端基礎設施,以實現可擴展和高效的處理,並提供用戶友好的移動和網絡應用界面,支持無縫的影片上傳和腳本編輯。項目還融合了無障礙功能,包括語音控制並與iOS設備上的Siri兼容,提高了包容性和易用性。



#### Main functions:

- 1. Al Video Accessibility Evaluation: Evaluates the accessibility of video content and checks for sensitive information such as violent or explicit content.
- 2. Al Movie Scene Analysis: Automatically breaks down and organises scene information (spatial layout, character expressions, actions, etc.) to ensure fast and accurate results.
- 3. Al Script Writing Assistance: Helps narrators generate accurate and effective scripts for audio description, speeding up the scripting process to increase efficiency.
- 4. Al Voice Video Generation: Combines voice and graphic technologies which supports multiple languages and voice styles to ensure clear and natural narration. In addition, the platform includes a voice overlay check to ensure that background sounds and voice descriptions do not interfere with each other.

There are 285 million blind or visually impaired persons in the world, with 200,000 visually impaired persons in Hong Kong at present, creating a huge demand for audio description services. AudioSense enables users to upload, play, edit videos and scripts easily to enhance the viewing experience of the visually impaired, allowing visually impaired persons to access and appreciate visual content, promoting social inclusion and equal access to information, so that everyone, regardless of their visual ability, can enjoy and participate in the rich world of visual media.

#### 以聲知形的主要功能包括:

- 1. AI視訊無障礙評估:可評估視訊內容的無障礙程度,並檢查是否有暴力或露骨內容等敏感資訊。
- 2. AI電影場景分析:自動分解和組織場景訊息 (空間佈景、人物表情、動作等),確保快 速準確地提供結果。
- 3. AI腳本撰寫輔助:協助口述者生成精確有效的語音説明腳本,加快腳本編寫過程,以提升效率。
- 4. AI語音影片生成:結合語音和圖像技術,支援 多種語言和語音風格,確保旁白清晰自然。 此外,該平台還包括語音重疊檢查,以確保 背景聲音和語音描述不會相互干擾。

全球有2.85億失明或視障人士,單在香港就有20萬視障人士,對口述影像服務有龐大需求。以聲知形令使用者能輕鬆上傳、播放及編輯影片與腳本,提升視障人士的觀賞體驗,讓視障人士也能存取和欣賞視覺內容,促進社會包容性和資訊的平等存取,不論其視覺能力如何,讓每個人都能享受並參與豐富的視覺媒體世界。





### Comments from Judging Panel 評審委員會評語

This project is practical and innovative. The automatic video to speech conversion function makes good use of Al technology, and the product is quite complete, offering practical and quick help to the visually impaired, bringing about a positive impact on society. Similar concepts can be extended to video surveillance, facility management, gaming, or the school classroom, which taregt a wide market and have good business potential. The impact will be further enhanced if following updates can better assist the visually impaired to produce their own videos.

這個項目實用且具創意,影片自動轉換語音功能善用AI技術,產品功能頗為完善,能為視障人士帶來實際和快速的幫助,並對社會造成正面影響。相似的概念往後也可拓展至監控影像、設備管理、遊戲或學校課堂上,擁有廣闊的市場和良好的商業潛力。如後續更新裏能更好地協助視障人士自行製作影片,將能夠進一步擴大影響力。

# Student Innovation (Higher Education) Silver Award 學生創新 (大專及高等教育) 銀獎

Hong Kong University of Science and Technology 香港科技大學
LEE Cheuk Sum / SO Ho Mang Marcus / WONG Ho Leong 李焯森 / 蘇顥萌 / 黃皓亮
https://handstalk.framer.website/





AI-Driven Real Time Sign Language Translate App

HandsTalk

## Al-Driven Real Time Sign Language Translate App – HandsTalk

The World Health Organisation (WHO) recognises that more than 5% of the world's population needs rehabilitation for hearing impairment. In Hong Kong, there is only one sign language interpreter for every 3,000 deaf-mute people, and the demand for real-time sign language interpreting services is very high.

HandsTalk is an Al-powered real-time sign language translation mobile communication app designed to remove communication barriers for sign language users, allowing them to communicate directly without intermediaries and without the need for any special device. The app seamlessly translates sign language into English using advanced Al models, computer vision technology and generative Al. Users can use it in real-time scenarios, video conversations, and more.

For sign language translation, HandsTalk has designed a new sentence completion feature that involves precise word selection to help compile lists of words and phrases. The application also recognises different gestures such as 'question mark', 'space' and 'delete' to enhance the flexibility of the generated sentences. The generative AI then creates coherent sentences from the translated words and phrases.

### 基於人工智能的即時手語翻譯應用程 式——手語通

世界衞生組織確認全球超過5%的人口需要聽力障 礙復健。在香港,每3,000名聾啞人士才有一名手 語翻譯員,對即時手語翻譯服務的需求相當殷 切。

HandsTalk是一個透過AI驅動的即時手語翻譯的手機通訊應用程式,旨在消除手語使用者的溝通障礙,讓手語使用者無需使用任何特殊裝置,也可以在沒有中介的情況下直接溝通。這個應用程式利用先進的AI模型、電腦視覺技術和生成式AI,無縫地將手語翻譯成英語。使用者可以在即時場景、視頻通話等情境下使用。

針對手語翻譯,HandsTalk設計了一個新穎的句子完成功能,涉及精確的單字選擇,以協助編寫單字和短語清單。此應用也能辨認不同的指示手勢,例如「問號」、「空格」和「刪除」,增強生成句子的靈活性。之後,生成式AI會從翻譯的單字和短語造出連貫的句子。這個過程通常不超過2秒鐘,相當於傳送文字或語音訊息。此方法



This process usually takes less than 2 seconds, which is equivalent to sending a text message or speaking. This approach effectively addresses the challenges of real-time sign language translation, such as sentence translation errors and unpredictable user actions, and accurately conveys the meaning the user intends, allowing the user to communicate confidently, thereby bridging the gap between signed and spoken language.

HandsTalk's sign language translation can be used face-to-face in real time or during a video call.

- 1. Live Translation: When using Live Translation, turn the camera towards the sign language user to translate.
- Video Call Translation: During a video call, sign language and speech will be converted into text. This allows sign language users and non-sign language users to communicate seamlessly on the same channel without any barriers.

In the future, this method can be extended to any type and variation of sign languages as long as a high-quality dataset is available. In addition, users can also access sign language videos and images in the application for demonstration and learning purposes, and evaluate their progress using the sign language translation feature.

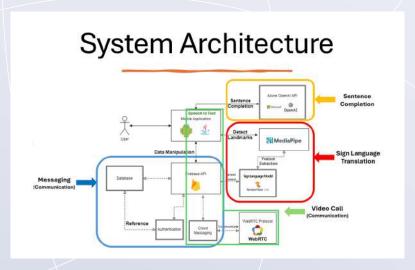
可有效解決即時手語翻譯中的各種挑戰,例如句 子翻譯錯誤和無法預測的使用者動作,準確傳達 出使用者預期的含義,讓使用者能夠自信地溝 通,彌合手語和口語之間的鴻溝。

HandsTalk的手語翻譯可面對面即時使用,也可在 視訊通話時使用。

- 1. 即時翻譯:使用即時翻譯時,將攝影機面向 手語使用者,以進行翻譯。
- 2. 視訊通話翻譯:視訊通話時,手語會翻譯成 文字,語音也會轉換成文字。這可讓手語使 用者和非手語使用者在同一頻道中無縫溝 通,沒有任何障礙。

未來,只要有高品質的資料集,此方法可擴展至 任何類型和語言的手語。除此之外,使用者也可 以在應用程式中存取手語影片和圖片,以進行示 範和學習,並使用手語翻譯功能評估自己的進 度。





### Comments from Judging Panel 評審委員會評語

This project uses AI models and technology in a very practical way, with sufficient knowledge of the core users, as well as consideration for usability and privacy issues in practical use. If different languages such as Cantonese and Putonghua can be developed on an ongoing basis, features such as sign language teaching can be added, and more business models can be explored, which will help create an inclusive society.

這個項目將AI模型和科技使用在非常實用的範疇上,對核心用戶有充足認識,考慮到實際使用上的便用性和私隱問題,如果能持續開發不同的語言如廣東話和普通話,加入手語教學等功能,並探索更多的商業模式,將可以協助創造共融社會。

# Student Innovation (Higher Education) Bronze Award 學牛創新 (大專及高等教育) 銅獎

## The Hong Kong Polytechnic University 香港理工大學

YEUNG Kwan Yu / SADMAN Sakib Rabbani 楊鈞羽

https://www.joinpaypilot.com



## **PayPilot Group Limited**

The two main functions:

1. Find the Best Way to Pay:

PayPilot intelligently analyses user's spending patterns to recommend the most rewarding credit card for each transaction. If users do not have the optimal card, the app facilitates easy applications, ensuring they always get the best deals. By using the payment discount, consumers can save money.

#### 2. Round-up Bills for Investments:

This feature rounds up users' everyday transactions to the nearest dollar, investing the spare change into various financial portfolios. This effortless micro-investment strategy encourages users to save and grow their wealth through daily activities. A micro-investment strategy is not a one-off investment, lowering existing barriers to investing while encouraging ongoing savings and investment, which makes financial education and wealth accumulation easy and comfortable.

### 付款導航

付款導航的兩大主要功能為:

### 1. 付款方式比較:

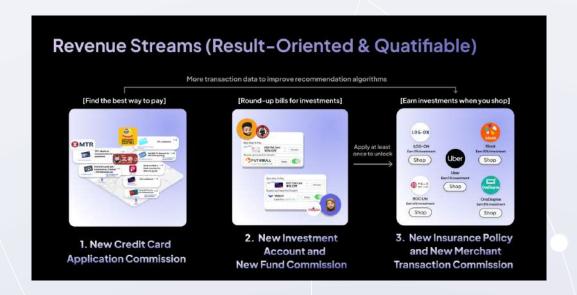
PayPilot 會智慧地分析使用者的消費模式,幫助消費者搜尋各商戶中的付款優惠,針對每筆交易,建議最好的付款方式或最優惠的信用卡。如果使用者沒有最佳的信用卡,該應用程式可協助使用者輕鬆申請,確保他們獲得最佳優惠。透過使用付款優惠,消費者可節省金錢。

#### 2. 日常消費微投資:

PayPilot可將使用者的日常交易金額按四捨五入的原則,計算到最接近的十位數,並將零錢投資到現金投資帳戶。使用者可透過日常活動來儲蓄和增加財富,提早享受穩定的財務成長與複利效應。微投資策略並非一次性投資,既降低了現有的投資障礙,又可鼓勵持續的儲蓄與投資,讓理財教育與財富累積變得輕鬆自在。



PayPilot obtains payment transaction APIs from banks to ensure accurate and up-to-date credit card transaction information. PayPilot will regularly update the app with new features and enhancements based on user feedback. PayPilot 從銀行獲取支付交易 API,確保提供準確度和接收最新的信用卡交易資訊,並將根據使用者反饋定期更新應用程式,提供新功能和改進。





### Comments from Judging Panel 評審委員會評語

The smart payment method constructed in this project is a good idea for solving the common problems of price comparison and excessive coins in daily life. The application is technically excellent, the business plan is comprehensive and has the potential to open up a wide market if more measures to protect user privacy are implemented.

這個項目所構建的智能付款方法,為解決日常生活中常見的價格比較,以及零錢太多的問題,提出一個良好的構想。應用程式在技術上非常出色,商業計劃上也考量全面,如果可以考慮開發更多保障使用者私隱的措施,將有潛力開拓廣闊的市場。

# Student Innovation (Higher Education) Certificate of Merit 學生創新 (大專及高等教育) 優異證書

The Hong Kong University of Science and Technology 香港科技大學
The University of Hong Kong 香港大學

CHEUNG Pok To Jason 張博滔 / CHAN Matthew 陳柏衡 / NIGAM Kaustubh / ABRAHAM Jose Christian

https://www.qualiflyhk.com



# **QualiFly Education - Al Tutor for Quality Education**

Due to a lack of educational resources, traditional education in Asia struggles to meet individual learning needs and diversity.

QualiFly addresses the UN's Sustainable Development Goal 4 - Quality Education, developed AI tutors for grammar and writing, and partnered with about 20 schools and NGOs to help over 2,000 students learn better. QualiFly initially focuses on English language learning in primary schools, with plans to expand to other age groups, curricula, and subjects.

#### Q-Grammar (Developed in 2022):

To achieve personalised education, students on the platform would receive questions persoanlly tailored by Al based on their real time performance. The Al tutor would explain the solution to students, track their past mistakes, in order to help them do revisions based on their weaknesses. The Al also generate real-time performance reports for parents to understand their children's situation.

### 飛昇教育——AI 導師成就優質教育

由於教學資源匱乏,亞洲的傳統教育難以滿足個別學習需求和多樣性。

QualiFly針對聯合國的可持續發展目標 4 ——優質教育,為語法和寫作開發 AI 導師,並與約20所學校和非政府組織合作,幫助超過2,000名學生更好地學習。QualiFly初步專注於小學英語學習,並計劃擴展到其他年齡組、課程和學科。

#### Q-Grammar (2022 年開發):

為了實現個人化教育,平台上的學生會收到人工智能根據其即時表現量身定制的題目。人工智能導師會向學生解釋答案,並追蹤他們過去的錯誤,以幫助他們根據自己的弱點進行複習。人工智能還會生成即時的成績報告,讓家長瞭解孩子的情況。



### Q-Writer (Developed in 2023):

This is a AI writing Tutor that teaches students how to write better essays. It adopts the famous educational framework, "Cognitive Process Theory of Writing (Flower & Hayes, 2004)": First, AI tutor will ask thought-provoking guiding questions to encourage students think about details of their writing. Then, based on the student's own ideas, the AI will generate an outline and provide thematic vocabularies for the students' reference, to teach them how to write better. Lastly, students receive personalised feedback provided by AI on Content, Language and Organisation (Based on EDB marking criteria), where they can understand how to improve next time.

QualiFly is developing AI tutors and teaching assistants to make education more personalised, efficient, and accessible. The product provides students with personalised exercises and real-time feedback based on the school curriculum, enabling learning anytime, anywhere. Teachers can customise lesson plans with AI-summarised insights into students' performance.

The product's vision for the future of education is to make teaching smarter and more efficient through the help of technology. Students will be able to receive personalised attention to their learning needs, achieving diversity in learning. Teachers will also be able to understand their students' situation in real time and make better plans for quality teaching.

### Q-Writer (2023 年開發):

這是一款寫作 Al Tutor,教導學生如何寫出更好的作文。它採用著名的教育架構「Cognitive Process Theory of Writing (Flower & Hayes, 2004)」:首先,Al 導師會提出發人深省的引導性問題,鼓勵學生思考寫作的細節。接着,根據學生自己的想法,人工智能會生成一個大綱,並提供主題詞彙供學生參考,教導他們如何寫得更好。最後,人工智能會就內容、語言和組織提供個人化的回饋(基於教育局的評分標準),讓學生明白下次如何改進。

QualiFly 正在開發 AI 導師和教學助理,使教育更加個性化、高效且易於獲得。此產品為學生提供個性化的練習和基於學校課程的即時反饋,實現隨時隨地學習。教師則可獲得 AI 總結的學生表現見解和定制的教學計劃。

此產品對未來教育的願景是透過科技的協助,讓 教學更聰明、更有效率。學生能夠得到個人學習 需求的照顧,體現學習的多樣性。教師也可以即 時了解學生的情況,為優質教學做出更好的規 劃。



# Introduction of Leading Organiser 籌辦機構簡介



Established in 2000 with the support of the Quality Education Fund, Hong Kong Education City (EdCity) was incorporated in 2002 to become a wholly-owned company of the Government. Its mission is to enable better adaptation to change curriculum initiatives through technology. With a strong commitment to academic collaboration, resource sharing, and professional development, EdCity aims to empower educators, students, and parents in their pursuit of excellence in education.

香港教育城(教城)於二零零零年在優質教育基金資助下成立,並於二零零二年公司化,成為政府全資擁有的公司,致力推動學界利用資訊科技適切配合課程變革。教城堅持學術合作、資源共享和專業發展的承諾,旨在幫助教育工作者、學生和家長追求卓越的教育。

For more information, please visit https://www.edcity.hk

有關教城的詳情,請瀏覽 https://www.edcity.hk

### Enquiry 查詢

### Contact Person 聯絡人:

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Email 電郵: afayewong@hkecl.net / hayleyyu@hkecl.net

Website 網址: https://www.edcity.hk/ictawards/

# Acknowledgement 島舗



# Organising Committee 籌辦委員會

(按英文字母姓氏排列) (In Alphabetical Surname Order)

# Judging Panel and Advisors 評審委員及顧問

### Chief Judge 首席評審

Dr Hubert Chung Yee CHAN, JP (Hong Kong Communications Company Limited) 陳重義博士,JP(香港通訊有限公司)

### Deputy Chief Judges 副首席評審

Prof Franics Yuk Lun CHIN (The University of Hong Kong) 錢玉麟教授(香港大學)

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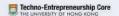












































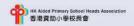




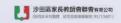
























































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