



STEM

課程活動簡介

Courses & Activities

Bonbon Robotics Limited

Apex Power Limited

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關於我們

About Us

Bonbon Robotics Limited

Bonbon Robotics 是一群由熱衷科技及製造工藝組成的本地研發團隊，早期孵化於香港理工大學Innohub，其後進入香港科學園創科計畫，我們專注於機械人設計及開發的服務，致力於為學生和教育機構提供高品質的機械人教育服務。我們的目標是幫助學生了解機械人的基礎知識，並提供實踐機會，以激發他們的創造力和想像力。



Bonbon Robotics is a local research and development team composed of individuals passionate about technology and manufacturing craftsmanship. The team was initially incubated at the Innohub of the Hong Kong Polytechnic University, and later joined the Hong Kong Science Park's innovation and technology program.

We specialize in robotic design and development services, dedicated to providing high-quality robotic education services for students and educational institutions. Our goal is to help students gain a fundamental understanding of robotics and provide them with practical opportunities to ignite their creativity and imagination.

Apex Power Limited

Apex 提供先驅性的水培和 ESG 課程, 以及名為 "ECO City" 的 ESG 棋盤遊戲, 適用於小學/中學/大學學生以及企業培訓。

"ECO City" 棋盤遊戲榮獲 "ICAN" 金牌, 作為一款創新的棋盤遊戲, 可以幫助玩家了解 ESG 及其影響:

"ECO City" 棋盤遊戲是一款角色扮演遊戲, 供參與者根據證券交易所和/或銀行監管機構的主要披露要求, 學習可持續和道德管理銀行/材料製造商/能源供應商。



該遊戲將參與者置於他們所選擇的角色中, 即銀行/材料製造商/能源供應商。

在 4-8 輪的遊戲過程中, 參與者:

- (1) 應對挑戰, 展示有效的風險管理措施, 並收集碳積分來建立一個綠色技術為基礎的可持續 ECO City;
- (2) 學習成為負責任的公民, 過著可持續的生活方式; 以及
- (3) 更好地理解環境 (E)、社會 (S) 和治理 (G)。

Apex offers pioneer hydroponic and ESG courses as well as an ESG boardgame, namely "ECO City" for primary/ secondary/ university students as well as for corporate training.

ECO City boardgame won the "ICAN" gold medal as an innovative boardgame that helps players to understand ESG and its implications:

The ECO City boardgame is a role-play game for participants in the sustainable and ethical management of banks/ Material Manufacturers/ Energy providers based on certain major disclosure requirements of the stock exchange and/ or bank regulator.

The game places participants in their chosen role as a bank/ Material Manufacturer/ Energy provider. Over 4-8 rounds, the participants:

- (1) navigate the challenges to exhibit effective risk management measures and to collect carbon credits to build a sustainable ECO City with green technology;
- (2) learn to be responsible citizens with sustainable lifestyles; and
- (3) understand E (Environment), S (Social), and G (Governance) better.



FABLE 機械臂人工智能研究精英課程

FABLE AI Robotic Arms Elite Course

對象：所有年級學生

Target: All

機械臂人工智能研究精英課程旨在透過FABLE機械臂進行學習和實作, 引領學生深入瞭解機械人技術及資訊科技的運用, 培養學生的編程設計、自主行動、系統思考、問題解決、規劃執行和創新應變能力。



學習目標：

- ❖ 學會積木程式
- ❖ 培養設計及思考能力
- ❖ 培養對機械臂的組裝及基礎操控的瞭解
- ❖ 培養對機械臂的應用及未來相關產業發展的瞭解

The FABLE AI Robotic Arms Elite Course aims to learn and implement through the FABLE robotic arm, leading students to have an in-depth understanding of the application of robotics technology and information technology, and cultivating students' programming design, independent action, systematic thinking, problem-solving, planning and execution and innovative resilience.

Objectives:

- ❖ Learn building block programming
- ❖ Cultivate design and thinking skills
- ❖ Develop an understanding of the assembly and basic operation of robotic arms
- ❖ Develop an understanding of the application of robotic arms and the future development of related industries

群飛無人機基礎訓練課程

Swarm Drone Foundation Programme

對象：小四至小六; 中一至中三年級學生

Target: P4-P6; S1-S3

群飛無人機基礎訓練課程是一個集合無人機的技術知識、操作方法及編程設計的課程。此課程旨在引領學生們齊心協力完成群飛任務，以及透過對無人機的實際操作學習並掌握無人機群飛的基本知識和技能，激發他們的創新思維，並提升他們的科技素養和問題解決能力。

學習目標：

- ❖ 認識並掌握無人機的基本構造和操作方法
- ❖ 了解無人機群飛的基本原理及其應用
- ❖ 能夠通過編程控制多架無人機進行群飛表演
- ❖ 透過協作完成群飛任務，培養學生的團隊合作能力
- ❖ 培養學生的創新能力，例如設計簡單的群飛表演方案



The Swarm Drone Foundation Programme is a course which combines the technical knowledge, operation methods, and programming design of drones. This course aims to guide students to work together to complete swarming missions, and learn the basic knowledge and skills of drone swarming through actual drone operation. This course can inspire and enhance students' innovative thinking, technological literacy and problem-solving abilities.

Objectives:

- ❖ Understand the basic structure and operation methods of drones
- ❖ Understand the basic principles and applications of drone swarming
- ❖ Be able to control multiple drones to perform swarming demonstrations through programming
- ❖ Cultivate students' teamwork skills through collaborative multi-drone missions
- ❖ Cultivate students' innovation abilities, such as designing simple swarming performance plans



ESG 與群飛無人機進階比賽課程

Advanced Drone ESG Competition Programme

對象：小四至小六；中一至中三年級學生

Target: P4-P6; S1-S3

學生將以小組形式設計和實施一個無人機環保故事展示方案，並學習高階無人機操作與編程技能，將其應用於實際的環境保護、社會服務和治理中。此課程核心在於增強學生的環境保護意識、社會責任感和科技素養，同時培養創意和問題解決能力，並推廣環保概念，提升公眾環保意識。

學習目標：

- ❖ 進一步掌握無人機操作和編程技術
- ❖ 理解 ESG (環境、社會和治理) 概念及其在無人機應用中的重要性
- ❖ 能夠設計和實施與環境保護、社會服務和治理相關的無人機應用
- ❖ 培養學生的創新能力和問題解決能力，例如應用無人機技術解決實際問題
- ❖ 推廣環保概念，增強公眾環保意識



Students will design and implement a drone-based environmental storytelling project in teams, and learn advanced drone operation and programming skills to apply in real-world environmental protection, social service, and governance.

The core of this course is to enhance students' environmental awareness, social responsibility, and technological literacy while cultivating their creative design and problem-solving abilities, and promoting environmental concepts to raise public environmental awareness.

Objectives:

- ❖ Further Mastering drone operation and programming techniques
- ❖ Understanding the ESG (Environmental, Social, and Governance) concept and its importance in drone applications
- ❖ Ability to design and implement drone applications related to environmental protection, social services, and governance
- ❖ Cultivate students' innovative abilities and problem-solving skills, such as applying drone technology to solve real-world problems
- ❖ Promote environmental protection concepts and raise public environmental awareness



Tello EDU 飛行器課程

Tello EDU Drone Flying Class

對象：所有年級學生

Target: All

在Tello EDU 飛行器課程中，學生將學習如何操控無人機和編寫積木程式，以及挑戰不同的飛行任務。

此課程旨在增進學生對無人機技術的興趣和認識，並在學習運用科技的同時，培養學生自主思考、問題解決、創新應變和團隊合作能力。



學習目標：

- ❖ 學會積木程式
- ❖ 培養設計及思考能力
- ❖ 培養學生對無人機的組裝及基礎操控的瞭解
- ❖ 培養學生對無人機的應用及未來相關產業發展的瞭解

In Tello EDU Drone Flying Class, students will learn how to operate drones and write block programs, as well as take on different flight missions.

This course aims to enhance students' interest and understanding of drone technology, and while learning to utilize technology, cultivate their independent thinking, problem-solving, innovative adaptation, and teamwork abilities.

Objectives:

- ❖ Learn block-based programming, design, and computational thinking
- ❖ Cultivate design and thinking skills
- ❖ Cultivate students' understanding of drone assembly and basic operations
- ❖ Cultivate students' understanding of drone applications and future industry development



環保 ESG • 環保【世界城】桌遊

ESG and Award Winning “ECO City” Boardgame

對象：小三至小六年級學生

Target: P3-P6

本課程將涵蓋ESG的基本概念，以及學生如何發展可持續的生活方式來保護環境，及在有趣的環保【世界城】桌遊中共同建立一個對環境友善的社會。

學生將學習各種 環保[世界城]結構的基本原理，如風力發電廠、太陽能發電廠、水力發電廠、地熱發電廠、回收廠等，並了解地球的碳循環過程，這將激發他們對相關綠色技術的興趣保護地球。

學習目標：

- ❖ 了解 ESG 原則與再生能源
- ❖ 提高學生對建造環保[世界城]中不同綠建築的認識
- ❖ 學生可以探索其他再生能源的應用



This course will cover the basic concept of ESG and how students can develop a sustainable lifestyle to protect the environment, as well as to work together in the fun boardgame to develop an environmentally friendly society.

Students will learn the fundamental principles of various ECO City structures such as wind power plants, solar power plants, hydropower plants, geothermal plants, recycling plants etc. and be aware of the carbon cycle process of Earth and this will inspire their interest in relevant green technologies to protect the Earth.

Objectives:

- ❖ Understanding ESG principles and renewable energy
- ❖ Enhancing student awareness of different green structures in building an ECO City
- ❖ Students can explore the application of other renewable energy

機械臂、水耕種植法和 ESG 概念

Robotic Arm, Hydroponic Farming and ESG Concept

對象：小三至小六年級學生

Target: P3-P6

此課程將涵蓋機械臂和水耕種植法在農業中的應用，以及 ESG 實踐在可持續農業中的重要性。學生將學習機械臂和水耕種植法的基本原理，以及如何利用它們提高農業效率和生產力，以確保可持續和道德的生產實踐。在過程中，學生能夠深入探索 ESG 的理念和實踐，激發他們對有關科技的興趣和潛能。



學習目標：

- ❖ 了解農業中的 ESG 原則
- ❖ 獲得實踐學習機會，例如設計和構建水耕種植機器人系統
- ❖ 增強學生對機械臂和水耕種植方面的知識和技能的認識
- ❖ 學生能夠探索新領域，例如結識農業專家和農業科技企業家

This course will cover the applications of robotic arms and hydroponics in agriculture, as well as the importance of ESG practices in sustainable agriculture.

Students will learn the fundamental principles of robotic arms and hydroponics, and how to leverage them to improve agricultural efficiency and productivity, ensuring sustainable and ethical production practices.

In the process, students will delve into the concepts and implementation of ESG, which will inspire their interest and potential in relevant technologies.

Objectives:

- ❖ Understanding ESG principles in agriculture
- ❖ Giving hands-on learning opportunities, such as designing and building a hydroponics planting robot system
- ❖ Enhancing student awareness and skills in robotic arm and hydroponics cultivation
- ❖ Students can explore new domains, such as connecting with agriculture experts and AgriTech entrepreneurs



環保 ESG 設計: 太陽能風扇

Environmental ESG Design: Solar Fan

對象：小三至小六年級學生

Target: P3-P6

本課程將涵蓋電路的結構、太陽能板的使用、太陽能電池板在為定製便攜式風扇發電時的應用，以及太陽能作為一種可再生能源如何幫助學生發展可持續的生活方式。

學生將學習電路的基本原理和太陽能電池板的功能，以及如何製作便攜式太陽能風扇。在此過程中，學生將了解ESG的概念和實施，這將激發他們對世界太陽能電站相關技術的興趣和潛力。



學習目標：

- ❖ 了解 ESG 原則與再生太陽能
- ❖ 提供實踐學習機會，例如設計和建造太陽能風扇系統
- ❖ 增強學生建構電路的意識與技能
- ❖ 學生可以探索其他再生能源在發電的應用

This course will cover the structure of an electricity circuit the use of solar panels and the application of solar panels in generating electricity for a custom-made portable fan, as well as how solar power is a renewable energy that helps the students to develop a sustainable lifestyle.

Students will learn the fundamental principles of an electric circuit the functioning of a solar panel, and how to build a portable solar fan. In the process, students will understand concepts and implementation of ESG, which will inspire their interest and potential in relevant technologies underlying solar plants in the world.

Objectives:

- ❖ Understanding ESG principles and renewable solar energy
- ❖ Giving hands-on learning opportunities, such as designing and building a solar fan system
- ❖ Enhancing student awareness and skills in setting up an electric circuit
- ❖ Students can explore the application of other renewable energy in the generation of electricity



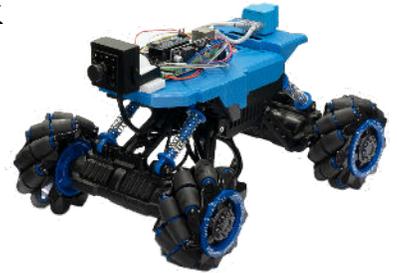
機械車之旅 - 探索STEM原理與實作

Arduino STEM Robotics Class Curriculum

對象：10歲以上之學生

Target: Students above 10 years old

此課程涵蓋培養電子、機械、控制等多個學科的知識，並且鼓勵學生進行創新設計，培養他們的創新思維和解決問題能力。學生將透過學習基本的機械原理與運動學，深入瞭解STEM領域的重要性和應用，並通過親身實作機械車模型，體驗動手操作的樂趣。此外，通過團隊合作與競賽，亦能提升學生們的溝通與協作能力。



學習目標：

- ❖ 熟習如何使用Arduino開發板進行編程和控制
- ❖ 了解常用電子元件和感測器的原理及應用
- ❖ 學習獨立組裝和控制機械車，實現基本功能
- ❖ 學習如何根據需求進行機械車功能的擴展和創新設計

This course covers the knowledge of multiple disciplines, including electronics, mechanics, and control systems. It encourages students to engage in innovative design, fostering their creative thinking and problem-solving abilities.

Through learning the basic principles and kinematics of mechanics, students will gain a deeper understanding of the importance and applications of STEM fields. By hands-on experience in building mechanical car models, they will also enjoy the pleasure of practical operations.

Through teamwork and competitions, the course also helps to enhance students' communication and collaboration skills.

Objectives:

- ❖ Familiarize with programming and control using Arduino boards
- ❖ Understand the principles and applications of common electronic components and sensors
- ❖ Learn to independently assemble and control a mechanical car to achieve basic functions
- ❖ Learn how to expand functionality and innovatively design the mechanical car based on requirements

TinkerCAD 3D 繪圖軟體教學

TinkerCAD 3D Modeling Software Class

對象：所有年級學生

Target: All

學生將學習如何創造自己的3D虛構角色，並在設計過程中使用各種技術，通過創造新的、有用的或富有想像力的解決方案解決一些日常問題。此課程旨在培養學生在2D平面設計、3D立體設計、電腦設計繪圖、視覺表達等方面的能力，同時鼓勵學生發揮他們的創造力，設計出獨特和有趣的作品。



學習目標：

- ❖ 創造三維空間中表達想法的詞彙
- ❖ 學習使用紙藝材料創建平面角色
- ❖ 學習在 Tinkercad 中創建3D的角色
- ❖ 學習使用數學計算解決現實世界的問題
- ❖ 能夠向老師或班級同學介紹 3D 角色

Students will learn how to create their own 3D fictional characters and utilize various techniques throughout the design process to devise novel, useful, or imaginative solutions to everyday problems.

This course aims to develop students' abilities in 2D graphic design, 3D modelling, computer-aided design, and visual expression. It also encourages students to exercise their creativity in designing unique and engaging works.

Objectives:

- ❖ Create vocabulary to express ideas in 3D space
- ❖ Learn to create 2D characters by using paper craft materials
- ❖ Learn to create 3D characters in Tinkercad
- ❖ Learn to solve real-world problems using mathematical calculations
- ❖ Able to introduce 3D characters to teachers or classmates



STEM 螺絲積木創意設計

STEM Fundamental Screw Block Design

對象：所有年級學生

Target: All

學生將透過這個課程深入了解螺絲的結構、功能和應用，並學習到螺絲製造、力學特性、材料、尺寸、安裝拆卸、維護和創新應用等方面的知識。透過動手實驗，學生們也能夠更深入地了解螺絲的性質和特點，並將所學應用到實際生活中，藉此培養他們的動手和創新能力。



學習目標：

- ❖ 加深學生對螺絲的基礎認知
- ❖ 提升STEM知識和動手能力
- ❖ 了解螺絲積木的種類、特性和應用
- ❖ 學習如何組裝和創意設計螺絲積木
- ❖ 發揮創意和設計能力，創造出具有實用性和創意性的作品

Students will gain a deep understanding of the structure, functions, and applications of screws through this course. They will learn about screw manufacturing, mechanical properties, materials, dimensions, installation, disassembly, maintenance, and innovative applications.

Through hands-on experiments, students will also develop a more in-depth understanding of the nature and characteristics of screws. They will then be able to apply their learnings to real-life situations, which will help cultivate their hands-on skills and innovative capabilities.

Objectives:

- ❖ Deepen students' fundamental understanding of screws
- ❖ Enhance stem knowledge and hands-on skills
- ❖ Explore the variety, characteristics, and applications of screw building blocks
- ❖ Learn how to assemble and creatively design with screw-building blocks
- ❖ Unleash creativity and design capabilities to create practical and innovative works

太陽和我們的太陽系：月球任務工作坊

Sun and Our Solar System: Mission to the Moon Workshop

對象：小三至小六年級學生

Target: P3-P6

本課程將介紹太陽系和8個行星(包括地球), 以及每個行星的特徵。學生將了解宇宙的起源——大爆炸, 以及登月的主要任務, 包括嫦娥六號樣本返回任務。

在此過程中, 我們的學生將有機會在我們的太空任務中進行角色扮演, 從而體驗和學習如何對機械手臂進行編碼, 以便它可以挖掘樣本、將樣本轉移到太空船等, 並幫助太空船安全返回地球。



學習目標：

- ❖ 了解宇宙和太陽系的起源
- ❖ 提供實踐學習機會, 例如對機械手臂進行編碼以設計月球上的樣本採集方法
- ❖ 了解嫦娥六號近期太空任務的挑戰與解決方案

This course will cover an introduction to our Solar System and the 8 planets (including Earth), as well as the features of each planet. Students will learn the origin of the Universe – The Big Bang, and the major missions to the moon, including the Chang'e 6 sample return mission.

In the process, our students will have the chance to role-play at our Space Mission so they can experience and learn how to code the robotic arm so it can dig up samples, transfer samples to the spacecraft etc and help the spacecraft to return safely to Earth.

Objectives:

- ❖ Understanding the Origin of the Universe and our Solar System
- ❖ Giving hands-on learning opportunities, such as coding the robotic arm to design the sample collection method on the moon
- ❖ Understanding the challenges and solutions of the recent space mission of Chang'e 6

保溫感應衣，智能廁所，智能尿片的設計

Thermal Insulation Clothing, Smart Toilet, Smart Diapers

對象：小四至小六年級學生

Target: P4-P6

在這個課程中，我們將探索如何利用現代科技來改善老年人的生活品質。我們的重點是

- (1) 保溫感應衣，它能監測體溫並自動調整衣服的溫度，確保老年人始終保持舒適和健康；
- (2) 利用Tinkercad軟體設計智能廁所；
- (3) 了解智能尿片如何幫助改善醫院/養老院長者的健康。



學習目標：

- ❖ 了解什麼是樂齡科技及其在日常生活中的應用
- ❖ 介紹不同類型的感應器，特別是溫度感應器的工作原理和應用
- ❖ 學生將動手製作簡單的保溫感應衣模型，了解如何將科技應用於實際問題解決
- ❖ 學生將學習使用 Tinkercad 軟體設計智能廁所
- ❖ 了解智能尿片技術及其應用
- ❖ 通過小組合作完成項目，培養學生的合作精神和創意思維



In this course, we will explore how modern technology can be used to improve the quality of life for seniors. Our focus will be on (1) thermal sensing garments, which monitor body temperature and automatically adjust the temperature of the garment to ensure that seniors always stay comfortable and healthy; (2) using Tinkercad software to design Smart Toilet; (3) understanding how smart diapers help to improve the health of seniors in hospital/ senior home.

Objectives:

- ❖ Understand what age-friendly technology is and its applications in daily life.
- ❖ Introduce the working principles and applications of different types of sensors, especially temperature sensors.
- ❖ Students will make a simple thermal insulation clothing model to understand how to apply technology to solve practical problems.
- ❖ Students will learn to use Tinkercad software to design a Smart Toilet.
- ❖ Understand the technology of Smart diapers and their application.
- ❖ Cultivate students' spirit of cooperation and creativity by completing projects through group cooperation.

合作夥伴

In Partnership With

STEM 課程參與的中、小學包括：

Primary and secondary schools participating in STEM courses include:

西貢崇真中學

祖堯天主教小學

荃灣路德會聖十架小學

青衣商會小學

西貢鄭植知中學

Hong Kong Academy 香港學堂國際學校

合作機構課程及活動：

Collaborative Programs and Activities:

- 香港能仁專上學院
香港三維打協會 - STEM交流日
機械人展示 - 自動導航
- 香港浸會大學 - 社會科學院
STEM 後疫情時代 - 學術交流研討會
- 香港公開大學
STEM BOOTCAMP 暑期訓練營
- 香港能仁專上學院:STEM 導師培訓日
- 香港理工大學 - 創新樓設計學院
PolyU 企業發展研究院 - PolyU Innohub
- 3D飛機模型STEM電渡課程
Orbit One 聖衣箱

我們的獎項及社會認可

Awards and Recognitions

團隊獎項及基金 Team Awards and Grants

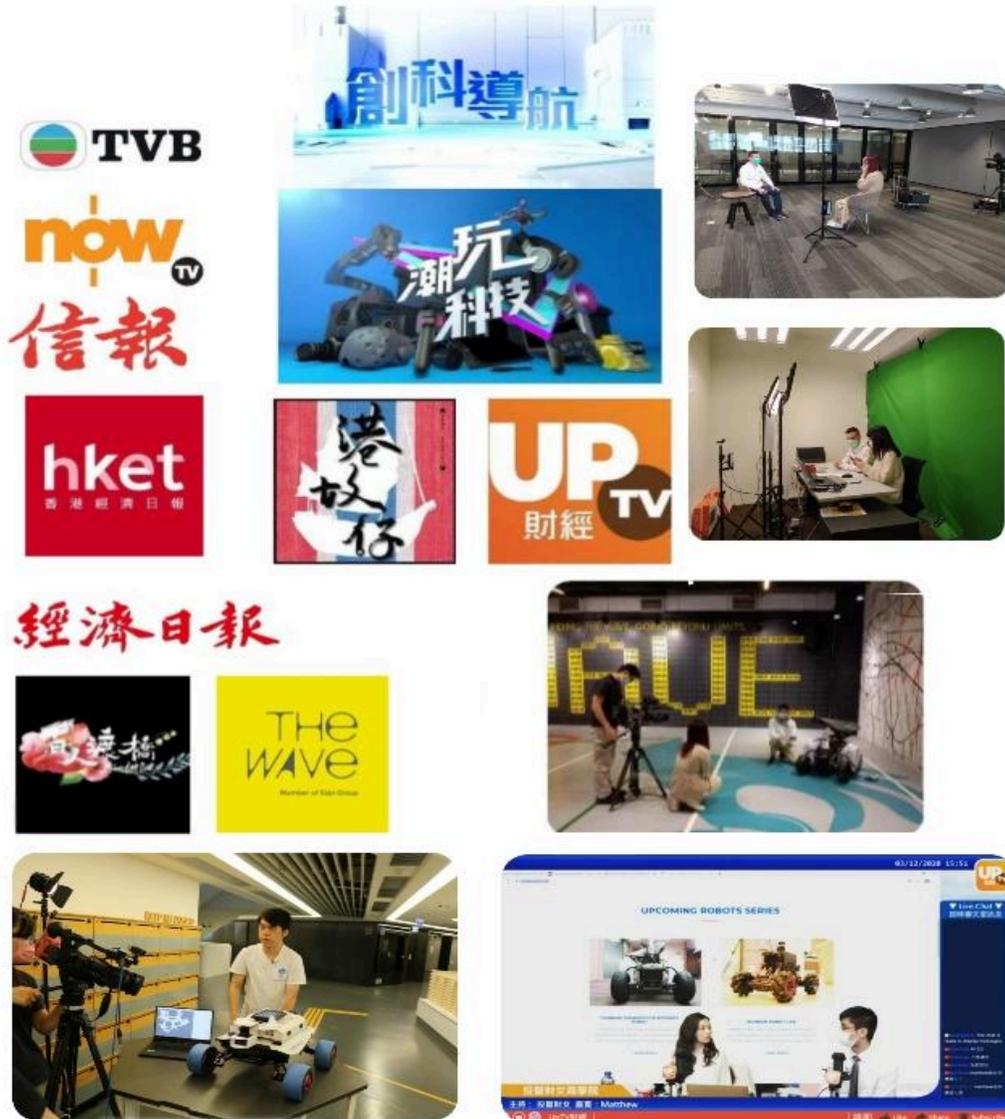
- 微型創型基金PolyU Micro Fund
- STARS初創飛昇計劃 香港工業總會

環保【世界城】桌遊 ECO City Boardgame

- ICAN Toronto, Canada - Gold Medal

傳媒報道

Media Coverage



聯絡我們

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