

Star Tech Salon 2019

摘星科技巡禮 2019

The 47th International Exhibition of Inventions of Geneva

第四十七屆日內瓦國際發明展

Geneva, Switzerland, 10-14 April 2019



- Prize of the Italian Delegation of the Exhibition
- Prize of the Technical University of Cluj-Napoca of Romania
- Gold Medal with the Congratulations of Jury
- Special Merit Award from Romanian Association for Alternative Technologies Sibiu



WiseEye: AI-based Textile Material Inspection System

聰明眼：人工智能紡織品檢測系統

Equipped with a high-resolution charge-coupled device camera, WiseEye employs Artificial Intelligence (AI)-based machine vision, big data and deep learning technologies to perform real-time automated inspection on fabrics in place of manual inspection during the manufacturing process. The system can detect 40 common fabric defects with a detection rate of over 90%.

「聰明眼」配備高解像度感光耦合元件相機，結合了人工智能、大數據和深度學習技術，可於織物的生產過程中實時自動檢測成品質素，以取代人工目測的檢定方法。系統可檢測約四十種常見的織物瑕疵，檢測率達百分之九十以上。



Principal Investigator: Prof. Calvin Wai-keung WONG

By Institute of Textiles and Clothing



- Prize of the Legal Company "Gorodissky & Partners", Russia
- Gold Medal with the Congratulations of Jury
- Special Merit Award from Romanian Association for Alternative Technologies Sibiu

Palm-sized 3D Ultrasound Imaging System for Radiation-free Scoliosis Assessment

用於檢測脊柱側彎的無輻射便攜式三維超聲成像系統

Scolioscan Air provides radiation-free assessment for diagnosing scoliosis in the early stages anywhere. The system can also be used to give accurate and safe real-time feedback during treatment and to monitor treatment progress. It is particularly suitable for mass screening in the community for early detection of scoliosis in adolescents.

Scolioscan Air 設計輕巧，能於任何地方為患者提供無輻射的脊柱側彎檢測；以及在進行治療期間，提供準確、安全的實時反饋和監察治療進度。此系統特別適用於社區層面的大規模篩查，從而及早發現青少年脊柱側彎問題。



Principal Investigator: Ir Prof. Yongping ZHENG

Team Members: Mr Qiang MENG, Mr Joseph HUI, Mr Henry WONG, Mr De YANG
By Department of Biomedical Engineering



- Prize of the Polish of Patents Office, Poland
- Gold Medal
- Special Merit Award from the Ministry of Education, Thailand



Mobile Exo-neuro-musculo-skeleton for Self-help Post-stroke Upper Limb Rehabilitation 移動式外神經肌骨系統

Combining neuro-muscular electrical stimulation, soft pneumatic artificial muscle and exoskeleton, the device can sense the electromyogram (EMG) signals of paretic muscles and provide voluntary motor intention control for users. It is lightweight, compact and comfortable to wear, allowing patients to use it for training anywhere, anytime.

這套裝置結合了神經肌肉電刺激、氣動人工肌肉和機械外力設計的優點，能夠感應癱瘓肌肉的肌電訊號，協助中風患者自主控制關節活動。裝置設計輕巧，穿戴舒適，方便患者隨時隨地進行訓練。

Principal Investigator: Dr Xiaoling HU

Team Members: Mr Wei RONG, Mr Waiming LI, Ms Chingyi NAM, Dr Honwah WAI (IC), Mr Jason NGAI (IC), Ms Tsz-ching CHEUNG (IC), Dr Li LI (ITC), Dr Junyan HU (ITC), Mr Peter PANG (IC), Prof. Waisang POON (CUHK)

By Department of Biomedical Engineering
Industrial Centre
Institute of Textiles and Clothing



- Gold Medal
- Special Merit Award from Academy of Technical Sciences of Romania
- Special Merit Award from Romanian Association for Alternative Technologies Sibiu



Flexible, Stable, High-energy Textile Lithium Batteries 高能量密度柔性織物鋰電池

The wearable, rechargeable lithium batteries with excellent energy density, cycling life and foldability are developed with metallic fabrics. Being highly reliable and safe to use, they are suitable for powering wearable electronics, smart apparels, health monitors, communications devices, etc.

這種可穿戴的充電式鋰電池以金屬織物造成，具有高能量密度、良好的循環穩定性，以及優異的耐彎折疊性能，是非常可靠和安全的電源選擇，適用於穿戴式電子產品、智能服飾、健康監測配件、通訊產品等。

Principal Investigator: Prof. Zijian ZHENG

Team Member: Dr Jian CHANG
By Institute of Textiles and Clothing



- Gold Medal

Indirect Evaporative Cooler for Efficient Energy Recovery 高效熱能回收間接蒸發冷卻器

By recovering the heat energy in the exhaust in a centralized air-conditioning system to cool and dehumidify the incoming fresh air, this innovative system significantly saves energy by around 17% to 35%. It is suitable for all climates, especially hot and humid ones.

此創新發明將中央空調系統排放空氣中的熱能回收，用以冷卻鮮風及降低鮮風的濕度，從而大幅節能，實驗證實可減省17-35%空調所需的能源。系統適用於任何氣候類型的地方，尤其適合潮濕及酷熱的天氣。

Principal Investigator: Prof. Hongxing YANG

Team Members: Dr Yi CHEN, Ms Yunran MIN
By Department of Building Services Engineering





- **Silver Medal**
- **Special Merit Award from University Politehnica of Bucharest**
- **Special Merit Award from Romanian Association for Nonconventional Technologies**



Curvature-adaptive Multi-jet Freeform Polishing System 用於精密製造的曲率自適應多射流自由曲面拋光系統

The novel system enables fast and precise polishing of freeform surfaces by adjusting the number of jets for different work pieces and controlling the fluid pressure of each jet according to the change of surface curvature. It can be applied in various fields such as biomedical science, optics, aerospace and 3D printing.

此創新系統可因應工件類型決定磨料水束的數目，並能按工件表面的曲率差異調控每束磨料水射流的流體壓力，從而提高自由曲面拋光工序的速度和精準度，適用於生物醫學、光學、航空航天、三維印刷等。



Principal Investigator: Ir Prof. Benny Chi-fai CHEUNG

Team Members: Dr Chunjin WANG, Dr Lesley Lai-ting HO, Mr Wayne Bo WANG,
Mr Chris Kin-leung CHAN, Mr Ka-chun CHEUNG

By Department of Industrial and Systems Engineering



- **Silver Medal**

An Industrial IoT-based Smart Robotic Logistics Management System

基於工業物聯網技術的智能機器化倉庫管理系統

Incorporated Industrial Internet of Things (IoT), cloud computing and robotics technologies, the smart system uses autonomous mobile robots and advanced intelligent robotic algorithms to replace the conventional man-to-goods approach with revolutionary goods-to-man automation operation, enhancing labour and space utilization in warehousing.

這套智能系統融合了工業物聯網、雲端運算及機械人技術，採用自主移動機械人及先進智能機械人演算法，將傳統用人力找貨搬貨的方式革新成全自動化的運作模式，提升了人力和倉庫空間運用的效益。



Principal Investigator: Dr Carman Ka-man LEE

Team Members: Mr Burling K. TAN, Mr Gabriel Yat-hei LEE, Dr Felix Chun-kit NG

By Department of Industrial and Systems Engineering

The 1st Asia Exhibition of Inventions Hong Kong

第一屆亞洲發明展覽會 - 香港

Hong Kong, 5-7 Dec 2018



- **Silver Medal**

Image-based Precise 3D Human Modelling 3D個性化人體建模技術

Equipped with 3D modelling and artificial intelligence, the smartphone app "1measure" calculates body measurements accurately and instantly from 2 photos, facilitating size recommendations for online shopping and made-to-measure fashion. 1measure provides excellent fashion shopping experience to online shoppers where the perfect fit is guaranteed.

「易量體」手機應用程式結合了最新的3D模型技術和人工智能，能以兩張照片即時準確地計算體型數據，從而推薦合適的服飾尺碼，甚至讓客戶於線上量身訂製衣服，享受衣必稱身的嶄新線上購物體驗。



Principal Investigator: Dr Tracy P.Y. MOK

Team Member: Dr Shuaiyin ZHU (TOZI Technology Co., Ltd.)

By Institute of Textiles and Clothing

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"1Measure" app
下載「易量體」
手機應用程式**

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Download on the
App Store





• Silver Medal

Waste Sponge as Solar Absorber for Vapour Generation 能產生蒸氣的廢棄海綿太陽能吸收器

Using specially treated, upcycled sponge as solar absorber, the device extracts freshwater in a simple, low-cost and sustainable way. It effectively draws water up to the air-water interface for evaporation. Its areas of application include water distillation, seawater desalination, wastewater treatment and fuel ethanol concentration.

這套裝置能以簡便、低成本、可持續發展的方式提取淡水。它利用經處理的回收海綿作為太陽能吸收器，把水份引到海綿表面進行蒸發，可應用於蒸餾水生產、海水淡化、廢水處理及酒精提純等範疇。



Principal Investigator: Dr Yuen-hong TSANG

Team Members: Ms Sainan MA, Dr Lili TAO, Mr Chun-yin TANG, Mr Chun-pang CHIU
By Department of Applied Physics

Asia International Innovative Invention Award 2018

亞洲國際創新發明大獎2018

Hong Kong, 24-26 Oct 2018



• Outstanding Automation Award

• Gold Award

An Industrial IoT-based Smart Robotic Logistics Management System 基於工業物聯網技術的智能機器化倉庫管理系統

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Principal Investigator: Dr Carman Ka-man LEE

Team Members: Mr Burly K. TAN, Mr Gabriel Yat-hei LEE, Dr Felix Chun-kit NG
By Department of Industrial and Systems Engineering



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