

St. Paul's Secondary School

IT Innovation Lab Workshops 2023

Workshop 1: Introduction to AI and Machine Learning

Purpose

This workshop is designed to enhance students' interest and to help students apply the concept of Machine Learning (ML) to develop innovative applications for smart living. Integration with smart living products will inspire students in creativity, collaboration and design talent. The learning activities include AI object classification, use of AI vision sensors and AI image classification.

Content

- The basic concept of AI and using online AI platform
- Object classifications using KNN algorithms
- Coding of Huskylens
- Image classification
- Design a mobile app with AI functions

Workshop 2: Big Data for Practical Applications

Purpose

This workshop is designed to strengthen students' understanding of Big Data and help them learn how to extract useful information from real-life data collected by various channels. Learning activities include usage of a dashboard to present the data and use of data extraction tools.

Content

- Data visualization
- Usage of dashboard to present the data
- Hands-on applications of data extraction

Workshop 3: Practice Applications of Internet of Things (IoT)

Purpose

This workshop is designed to enhance students' interest in IoT (Internet of Things). Students are requested to apply STEM theories to real-life practice by setting up smart home applications. Learning activities include the use of built-in WiFi-IoT boards, coding skills for Air Quality Sensor, use of IFTTT platforms, IoT coding and integration with Smart Devices.

Content

- Usage of built-in WiFi-IoT board and integration with Micro:bit
- Usage and coding skill for Air Quality Sensor
- Usage and coding skill for Water Quality Sensor
- Integration with IFTTT and EasyIoT IOT Platforms
- IoT coding and integration with Smart Device (Nanoleaf LED light panels)
- Design a mobile phone app to control the Smart Device (Nanoleaf LED light panels)

Workshop 4: Introduction to VR Coding

Purpose

This workshop is designed to give students a basic understanding of VR technology and related VR technology products, and to understand the characteristics of virtual reality (VR). Students will use a 360-degree camera to take photos and videos, and carry out post-processing. Learning activities include game design such as room escape and Science coding exercise such as virtual catapult.

Content

- Use of 360 cameras to capture 360 photos
- CoSpaces VR coding
- Build 3D model using TinkerCAD
- Design interactive games using CoSpaces Pro

Workshop 5: Blockchain and NFT Applications Course

Purpose

It is important to let students understand the applications of blockchain technology in the sector and how we can be involved in the vibrant FinTech market in Hong Kong. The course will cover the building blockchain introduction, NFT art creation and the concept of NFT minting. Not only will students be introduced to programming knowledge and skills, but they will also be asked to apply what they learn on the course to create a real-world NFT.

Content

- Digital Art: how to create digital art in various formats that are suitable as an NFT
- Crypto Wallet: learn the basics of what a crypto wallet is and how it stores information
- Introduction to Web Development of NFT project

Workshop 6: Python Application Course

Purpose

Coding is the foundation of technology applications, and Python is the programming language enabling many advanced technologies. Students will be introduced to Python concepts such as data types, functions and loops. Students will also use Python to build applications such as report card calculator, supermarket register, and a daily reading recommendation engine.

Content

- Python constructs
- Indexing and creating lists
- Creating functions
- Applying Python in Daily Life
 - Make your own Supermarket Register

Workshop 7: The Sandbox Workshops/Courses

Purpose

Students will develop and design interactive 3D digital artworks and games within the Web3.0 Metaverse platform. Our students will build and create different 2D/3D digital art and animations using different software such as Voxedit and Sandbox Maker. Using different development platforms, our students will broaden their horizons in the IT and gaming industries. Students are encouraged to be more engaged in 2D/3D design, 3D animation and game design. Our students will create and display their digital art and game projects in the blockchain platform, and share their digital art and game projects for people around the world. We also expect students to enhance their interest in IT careers and become tech entrepreneurs in the future.

Content

- Develop and design interactive 3D digital artworks and games within the Web3.0 Metaverse platform
- Build and create different 2D/3D digital art and animations using different software such as Voxedit and Sandbox Maker
- Create and display their digital art and game projects in the blockchain platform
- Share their digital art and game projects for people around the world.

Workshop 8: Python Beginner Programming Certificate Course

Purpose

- Cultivate students' interest in Python
- Increase students' knowledge of Python to program thematic drawing creation - including concepts, practical skills and programming tools

Content

- Drawing and animation programming
- Application of different programming skill sets to create student projects
- Functions and variables

Workshop 9: FinTech and Data Visualization Course

Purpose

- Students will be introduced to programming knowledge and skills.
- Students will also be asked to apply what they learn on the course to build real-world FinTech applications.
- Students will have more understanding of the technology and financial industries and their convergence.

Content

The course will cover the building of a chatbot, blockchain introduction and Python visualization (Stock Market data theme).