Sharing on Al Robotics Course for Elite Students

Christian Alliance S C Chan Memorial College









Sharing on

- What we did
- Why we did it?
- What we are going to do next







Background



No D&T

Computer Literacy - 1 period (40 mins) per cycle

Total lesson time - 44 hrs in 3 years

Occasionally join external competitions (apps / HKOI / STEM)







Junior form Curriculum

mBot / Halocode / CyberPi (S.1)

Sketchup / Office application (S.2)

Scratch game programming / Spreadsheet (S.3)







Company Visit



About the Course



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About the Programme 🗸 🛛 Application Procedure 🗸 👘 Useful Information 🗸

Showcase What's New

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Sample IT Activities for Secondary Schools

Robot STEM Program

Objective:

To enhance students' competence in STEM by working with 5G AI robot. From design to execution, with the considerat the fundamental knowledge of 5G AI robotics under "Integrated Project Based Learning" (IPBL) approach through real-

Objective



- Enhance students' competence in STEM by working with AI robot
- Understand the components of a robot
 - AGV, AI, 5G network
- Understand theories behind robot operation
 - Object identification, avoid obstacles with shortest path
- Design factors and considerations

About the Course



Duration: 18hrs (3 days summer course)

Difficulty: Moderate \rightarrow Advanced

Participants: Students studying / opted ICT



Theories

Hardware Modules of a Robot
AGV, Lidar, PC module, Camera, Mic, monitor, etc

Algorithm and AI

- Shortest path algorithms
- Machine learning
- Object and sound recognition

Python Coding

Hands-on Activities

- Build a PC as the controller of the robot
- Write simple Python codes
 - Robot movement
 - Voice command
 - Identify objects

Hardware





AGV and Lidar



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) Build Control PC





Control the Robot with the built PC







Result

5G vs 4G AGV Lidar Motor Encoder Shortest Path Algorithms Al Python Design considerations



- Function vs Cost
- Durability
- Monitoring
- Safety
- Suit different venues



Result

Enjoy the course

Willing to take the next level







Test the market



- Test the market
 - Students' interest and ability
 - Deliverables of service partners

- Other Courses we tried
 - AI robotic arm
 - Drone coding







Upcoming Innovation Lab Plan



