(ML100) Machine Learning for Kids

Course Description:

From spam filters to self-driving cars, Machine Learning (ML) is all around us! How do we stay relevant and ride with the waves of the rise of Artificial Intelligence?

We can embrace these changes and get ahead of the curve by building capacity to understand and use machine learning to our advantages. **ML100** introduces the basic concepts of Machine Learning using ScratchX and Python. Children as young as 11-years old can code to teach a machine to learn the following:
- Gameplay (Eg Tic-tac-toe)
- Image Recognition
- Speech Recognition

This class will be conducted in 5 sessions and consist of a series of engaging activities to teach the concepts on Machine Learning. Participants will learn to write codes that teaches a computer to play simple games like the Tic-tac-toe, as well as to carry out image recognition.

A parent who signs up with his/her child will receive discount! So grab this opportunity to learn useful and essential future skills and bond with your family members!

Details:

Date: **Time**:	8 to 11 December 2020 or 15 to 18 December 2020 (Tuesday to Friday) 1.30 pm to 4.30 pm
Venue:	Math Arena Enrichment Centre
Address:	Blk 488B Tampines Street 45 #B1-147 Singapore 521488

Prerequisite:
- Completed our core Scratch Module **(Sc100) Let's Start from Scratch** or have similar Coding experiences
- Process an open mind to learn something new

Recommended Age: 11 years and above
Session Format: 4 x 3 hours
Fee before 2020 Year End Holiday Program E.B.D.: SGD 520

Trainer:
Mr. Dean Ang (Honours Degree, National University of Singapore, Double Major in Mathematics and Computational Science; Ex-HOD ICT of Raffles Institution and School of Science and Technology, Singapore)

Who this course is for:
This course is designed with sample projects to implement machine learning. It is suitable for:
- Learners curious to understand the basics of machine learning
- Beginner programmers looking to apply machine learning in open-ended projects
- Teachers / Tutors looking to craft learning content for coding lessons

Course Outline:

Session 1 - Introduction to Machine Learning	Session 2 - The Tic-Tac-Toe Game - ML based on Numbers
● What is an Artificial Intelligence (AI)? ● What is Machine Learning (ML) ● Basic Processes of ML	● Knowing the Tic-Tac-Toe game ● Abstraction in the Tic-Tac-Toe game ● Training the computer to play well
Session 3 - Image Recognition I	**Session 4 - Image Recognition II**
● How a computer can recognise an image ● Teach a computer to recognise an image	● What makes a good training model for image recognition ● Why certain image recognition training models fail?

Further Enrichment - Alien Code - Speech Recognition
- How a computer can recognise natural speech
- Teach a computer to recognise speech

Learners will take home: Project files/Notes, badges and certificate upon completion

Frequently Asked Questions (FAQ)

1. **What is Scratch?**
   Scratch is a visual coding software that empowers users to easily combine media to create and share their own interactive stories, animations, games, music, and art.

2. **Why choose ScratchX?**
   ScratchX is a platform for people to write and share their own Scratch extensions. With Experimental Extensions, one can create Scratch projects that connect with external hardware and online resources.

3. **What is Machine Learning?**
   Machine Learning is a set of methods which enables the computer to take decisions or infer conclusions without us guiding it.

4. **What age group is suitable for this course?**
   The recommended age is 11 years old onwards.

5. **My child is new to programming. Will he/she be able to follow?**
   The course is not suitable for children with no programming. Students should possess basic coding concepts such as variables and data types, branching and looping etc.

6. **Is this course difficult to learn?**
   The module is designed for kids from 11 years onwards. Student with basic coding knowledge with find it fun and easy to follow along.

7. **Do I need to bring my computer laptop or any other equipment?**
   All equipment and notes will be provided. Learners may only need to bring their water bottle and basic writing materials in case they want to plan on a piece of paper.