

Machine Learning For Kids :: Teachers' notes

Worksheet	Rock, Paper, Scissors
Activity	Make a Rock, Paper, Scissors game in Scratch that learns to recognise hand shapes.
Objective	Teach a computer to recognise shapes <ul style="list-style-type: none"> How computers can be trained to recognise pictures. The important of variety in training machine learning systems.
Difficulty level	Intermediate Taking the training photos of your own hand needs coordination.
Time estimate	45 minutes
Summary	Students will train a machine learning model to recognise pictures of hand shapes. They will use this to make a project in Scratch that plays rock, paper, scissors.
Topics	image classification, supervised learning

Setup

Each student will need:

Print-outs	Project worksheet (download from https://machinelearningforkids.co.uk/worksheets) Blocks in Scratch scripts are colour-coded, so printing in colour will make it easier for students.
Files	rock-paper-scissors.sbx (download from https://machinelearningforkids.co.uk/worksheets)
Technology	Web-cam
Access	Username and password for machinelearningforkids.co.uk

Class account will need:

API keys	Watson Visual Recognition 1 custom model per student One "Lite" API key is free but can only be used to create 1 custom model One "Standard" API key can be used to create multiple custom models more detail at: https://github.com/daledane/ml-for-kids/raw/master/doc/machinelearningforkids-apikeys.pdf
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Help

Potential issues	<ul style="list-style-type: none"> Students will be taking photos of their hands and uploading them to a secure site, where they are kept until their photo or project is deleted. As long as only their hands are visible in photos they take, then students are unlikely to be identifiable from this. If using laptops, angling the screen towards the ceiling helps with this. However, if the chance of photos accidentally including students raises concerns it may be sensible to obtain parental permission. Students often take a large number of very similar training photos. This is less likely to be accurate than photos of hands in a variety of positions and angles. It's helpful to highlight this and encourage students to think about why it is the case. "https://machinelearningforkids.co.uk" is a long URL to type for some children. You may find it easier to set up a bookmark that they can click on instead. <p>General troubleshooting and help at https://machinelearningforkids.co.uk/help</p>
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