Machine Learning For Kids :: Teachers' notes

Worksheet	Snap
Activity	Make a card game in Scratch that learns to recognise pictures of your card.
Objective	**Teach a computer to recognise what icons look like** • Learn how computers can be trained to recognise pictures
Difficulty level	Beginner
Time estimate	1.5 hours (for full version of the project, where the students make their own cards) 45 minutes (if students are provided with pre-made cards)
Summary	Students make cards with different symbols. They will train a machine learning model to recognise what the symbols look like by taking pictures of them with a computer webcam. They use this in Scratch to make a Snap game where the computer recognises if it chooses a matching card.
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.
Resources	Paper, scissors, felt pens (for full project, where the students make their own cards) or Pre-made cards (download and print the "Additional project resources")
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 2 custom models One "Standard" API key can be used to create to create multiple custom models more detail at: https://github.com/IBM/taxinomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf

Customizing

If you use **PRIMM** approaches with your class, add a step where students predict how the project template works.
If you want to **increase the amount of coding** involved, delete some of the code from the project template and add steps to the worksheet so students code it themselves.
If you want to **encourage problem solving**, delete some of the detail in the worksheets and provide more general instructions instead.
Project template files & worksheets in MS Word format are available so you can **modify them to suit your class**.

Project templates	https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates Scratch 3 templates end .sb3 Scratch 2 templates end .sb2
Worksheets	https://github.com/IBM/taxinomitis-docs/tree/master/project-worksheets/msword

Help

Potential issues	• Students will take photos and upload them to a secure site. If only cards are visible in photos they take, students will not be identifiable. If this raises concerns it may be sensible to obtain parental permission. • "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. General troubleshooting and help at https://machinelearningforkids.co.uk/help