Machine Learning For Kids :: Teachers' notes

Worksheet	Locate Larry
Activity	Make a Where's Wally? game in Scratch and teach the computer to find your character.
Objective	**Teach a computer to find something in a picture** • How computers can be trained to recognise pictures. • How image pre-processing is used to find a small item in a larger picture
Difficulty level	Intermediate The project is reasonably straightforward but builds on being able to do image classification of individual images. It's better used as a follow-on project to another images project.
Time estimate	1 hour
Summary	Students will make a Scratch project that generates a scene, cuts it into a grid of smaller squares, and trains an image classifier on those grid squares.
Topics	image classification, supervised learning, image pre-processing

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.
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**.

Template	https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates
Worksheets	https://github.com/IBM/taxinomitis-docs/tree/master/project-worksheets/msword

Help

Potential issues	• Machine Learning models for image projects sometimes take up to 5 minutes to train. Students can continue to work on their Scratch project scripts while they wait, if you like. They won't be able to run the project until the machine learning model is ready, however. • "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. • The worksheet screenshots are based on Scratch 2. You may prefer to use Scratch 3 instead, however students may find it harder to find some blocks. General troubleshooting and help at https://machinelearningforkids.co.uk/help