

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Virtual Pet</b>
<b>Activity</b>	Make a virtual pet in Scratch that learns to recognise what you are doing
<b>Objective</b>	<b>Teach a computer to recognise pictures</b> <ul style="list-style-type: none"> <li>Learn how computers can be trained to recognise an object</li> </ul>
<b>Difficulty level</b>	Intermediate
<b>Time estimate</b>	45 minutes
<b>Summary</b>	Students will train a machine learning model to recognise pictures by taking photos of objects with a computer webcam. They will use this in Scratch to make a character that recognises what they are doing.
<b>Topics</b>	image classification, supervised learning

## Setup

Each student will need:

<b>Print-outs</b>	Project worksheet (download from <a href="https://machinelearningforkids.co.uk/worksheets">https://machinelearningforkids.co.uk/worksheets</a> )  Blocks in Scratch scripts are colour-coded, so printing in colour will make it easier for students.
<b>Technology</b>	Web-cam
<b>Access</b>	Username and password for machinelearningforkids.co.uk

Class account will need:

<b>API keys</b>	<b>Watson Visual Recognition</b> 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 multiple custom models  more detail at: <a href="https://github.com/IBM/taxonomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf">https://github.com/IBM/taxonomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf</a>
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## Help

<b>Potential issues</b>	<ul style="list-style-type: none"> <li>Students will be taking photos and uploading them to a secure site, where they are kept until their photo or project is deleted. As long as only the objects are visible in photos they take, then students will not be identifiable from this. If this raises concerns it may be sensible to obtain parental permission.</li> <li>Machine learning models can sometimes take up to 5 minutes to train. It is okay for students to work on their Scratch projects during this time, rather than wait for this to complete first.</li> <li>"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.</li> <li>The worksheet screenshots are based on Scratch 3. Some students may be unfamiliar with this, however the worksheet should provide enough guidance for even students who have never used it before.</li> </ul> <p>General troubleshooting and help at <a href="https://machinelearningforkids.co.uk/help">https://machinelearningforkids.co.uk/help</a></p>
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