

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Snap</b>
<b>Activity</b>	Make a card game in Scratch that learns to recognise pictures of your card.
<b>Objective</b>	<b>Teach a computer to recognise what icons look like</b> <ul style="list-style-type: none"> <li>Learn how computers can be trained to recognise pictures</li> </ul>
<b>Difficulty level</b>	Beginner
<b>Time estimate</b>	1.5 hours (for full version of the project, where the students make their own cards) or 45 minutes (if students are provided with pre-made cards)
<b>Summary</b>	Students will make cards with different coloured icons. They will train a machine learning model to recognise what the icons look like by taking pictures of them with a computer webcam. They will use this in Scratch to make a Snap game where the computer recognises if it chooses a matching card.
<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.  There are <b>two versions of the worksheet</b> – depending on whether students will make their own cards, or if you will give them pre-made cards.
<b>Resources</b>	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”)
<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/taxinomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf">https://github.com/IBM/taxinomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf</a>
-----------------	---

## 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 cards 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>“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 2. You may prefer to use Scratch 3 instead, however students may find it harder to find some blocks.</li> </ul> General troubleshooting and help at <a href="https://machinelearningforkids.co.uk/help">https://machinelearningforkids.co.uk/help</a>
-------------------------	---