

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Hand Gestures</b>
<b>Activity</b>	Train a computer to be recognize shapes that you make with your hands in Scratch.
<b>Objective</b>	<b>Teach a computer to recognise shapes</b> <ul style="list-style-type: none"> <li>How computers can be trained to recognise pictures.</li> <li>How AI projects are assembled from custom &amp; pretrained models</li> </ul>
<b>Difficulty level</b>	Advanced The Scratch script is a little complex. The final lesson explanation is a little complicated, and best attempted after a simpler project.
<b>Time estimate</b>	1 – 2 hours
<b>Summary</b>	Students will train the computer to recognise pictures of hand shapes.
<b>Topics</b>	decision trees, reinforcement learning, image classification, pretrained models

## 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>Access</b>	Username and password for machinelearningforkids.co.uk

Class account will need:

<b>API keys</b>	None
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## 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**.

<b>Template</b>	<a href="https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates">https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates</a>
<b>Worksheets</b>	<a href="https://github.com/IBM/taxinomitis-docs/tree/master/project-worksheets/msword">https://github.com/IBM/taxinomitis-docs/tree/master/project-worksheets/msword</a>

## Help

<b>Potential issues</b>	<ul style="list-style-type: none"> <li>This project is most effective as a follow-on to “Rock, Paper, Scissors”.</li> <li>You can suggest that students press the red STOP button in Scratch when not using the project (when the pre-trained model doesn't need to keep running)</li> <li>Remind students to minimize the stage when they need more room for their</li> </ul> <div data-bbox="753 1715 920 1812" data-label="Image"> </div> <p>code using this button:</p> <ul style="list-style-type: none"> <li>“<a href="https://machinelearningforkids.co.uk">https://machinelearningforkids.co.uk</a>” 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> </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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