

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Mailman Max</b>
<b>Activity</b>	Make a postal sorting office in Scratch that can recognise handwritten postcodes on envelopes.
<b>Objective</b>	<b>Teach a computer to recognise handwriting</b> <ul style="list-style-type: none"> <li>Learn how computers can be trained to recognise handwriting</li> <li>Learn how “optical character recognition” is used to automate tasks like recognising postcodes on letters</li> </ul>
<b>Difficulty level</b>	Beginner
<b>Time estimate</b>	1 hour
<b>Summary</b>	Students draw letters on the screen using an on-screen canvas. This will train a machine learning model to recognise some handwriting. They will use this in Scratch to make a project that can sort letters based on the postcodes they write on them.
<b>Topics</b>	optical character recognition, handwriting recognition, image classification

## 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>Project templates</b>	<a href="https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates">https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates</a> Scratch 3 templates end .sb3                      Scratch 2 templates end .sb2
<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>Some children struggle to write letters by dragging the mouse pointer on the canvas. Reassure them it doesn't need to be perfect, and training the computer to recognise messy handwriting with examples of messy handwriting is fine!</li> <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> <li>The worksheet says to use Scratch 3, but you can use Scratch if only Internet Explorer is available.</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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