

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Face Lock</b>
<b>Activity</b>	Make a phone in Scratch that can only be unlocked if it recognises your face.
<b>Objective</b>	<b>Teach a computer to recognise what faces look like</b> <ul style="list-style-type: none"> <li>Learn how computers can be trained to do facial recognition</li> <li>Learn how facial recognition can be used for authentication</li> </ul>
<b>Difficulty level</b>	Beginner
<b>Time estimate</b>	1 hour
<b>Summary</b>	Students will train a machine learning model to recognise their face, by taking pictures with a computer webcam. They will use this in Scratch to make a phone that unlocks if it recognises the owner's face.
<b>Topics</b>	facial recognition, biometrics, 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>Resources</b>	Toys with faces (if you don't want the students to take photos of their own face)
<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 1 custom model One "Standard" API key can be used to create multiple custom models  more detail at: <a href="https://github.com/daledane/ml-for-kids/raw/master/doc/machinelearningforkids-apikeys.pdf">https://github.com/daledane/ml-for-kids/raw/master/doc/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 of their face and uploading them to a secure site, where they are kept until their photo or project is deleted. You may need to obtain parental permission before running this activity. Alternatively, you could tell them to take photos of toys with faces (e.g. Lego figures, cuddly toys, action figures, etc.) instead. The screenshots in the student worksheet uses Lego figures as an example of this.</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> </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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