

Machine Learning For Kids :: Teachers' notes

Worksheet	Face Lock
Activity	Make a phone in Scratch that can only be unlocked if it recognises your face.
Objective	Teach a computer to recognise what faces look like <ul style="list-style-type: none"> Learn how computers can be trained to do facial recognition Learn how facial recognition can be used for authentication
Difficulty level	Beginner
Time estimate	1 hour
Summary	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.
Topics	facial recognition, biometrics, image classification, supervised learning

Setup

Each student will need:

Print-outs	Project worksheet (download from https://machinelearningforkids.co.uk/worksheets) Blocks in Scratch scripts are colour-coded, so printing in colour will make it easier for students.
Resources	Toys with faces (if you don't want the students to take photos of their own face)
Technology	Web-cam
Access	Username and password for machinelearningforkids.co.uk

Class account will need:

API keys	Watson Visual Recognition - 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: https://github.com/IBM/taxinomitis-docs/raw/master/docs/pdf/machinelearningforkids-apikeys.pdf
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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**.

Template	https://github.com/IBM/taxinomitis-docs/tree/master/scratch-templates
Worksheets	https://github.com/IBM/taxinomitis-docs/tree/master/project-worksheets/msword

Help

Potential issues	<ul style="list-style-type: none"> 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. "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. <p>General troubleshooting and help at https://machinelearningforkids.co.uk/help</p>
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