

## Guide for IBMers

### 1. Create a Bluemix account if you don't already have one

You'll need a Bluemix account to set up the Watson APIs.

*FYI: Groups led by non-IBMers will not have to do this. Watson API keys will be set up for them, and the section of the tool to manage Watson credentials will be hidden.*

### 2. Add Watson Conversation credentials for your group to use

*You will need to do this if you want your class to be able to do projects that recognise **text***

Go to <https://console.bluemix.net/catalog/services/conversation>

Create an instance of the Watson Conversation service, but leave it "unbound".

Once you've created it, click into it, click on "Service credentials" and then "View credentials"

*You need the (36-character) username and the (12-character) password.*

Go to <https://machinelearningforkids.co.uk/teacher>

The section "Watson Conversation" has an "Add new credentials" button. Click that, and enter the username and password for your Conversation service.

*The number of "workspaces" for the service instance you create will be the number of text machine learning models your group can have at any one time.*

*You can add more than one username/password pair if you need more for your group.*

### 3. Add Watson Visual Recognition credentials for your group to use

*You will need to do this if you want your class to be able to do projects that recognise **images***

Go to <https://console.bluemix.net/catalog/services/visual-recognition>

Create an instance of the Watson Visual Recognition service, but leave it "unbound".

Once you've created it, click into it, click on "Service credentials" and then "View credentials"

*You need the (40-character) API key.*

Go to <https://machinelearningforkids.co.uk/teacher>

The section "Watson Visual Recognition" has an "Add new API key" button. Click that, and enter the API key for your Visual Recognition service.

*The number of "custom classifiers" for the service instance you create will be the number of image machine learning models your group can have at any one time.*

*You can add more than one API key if you need more for your group.*

### 4. Set up accounts for your students

You will need to create user accounts for your students to be able to log in.

Go to <https://machinelearningforkids.co.uk/teacher>

The section "Students in your group" has a button to let you create user accounts. *Their password will be displayed after the account is created.*

*(Note: You don't need to use a student's real name. Generic user names like "student01" are fine.)*

There are also controls there to delete user accounts, & reset passwords if your students forget.

## 5. Prepare a lesson plan

Worksheets for a variety of projects are available for download.

Go to <https://machinelearningforkids.co.uk/worksheets>

A suggested order to try some of these worksheets is included on the following page.

Each worksheet has step-by-step instructions, and is a complete project to demonstrate an aspect of machine learning.

*Some of the projects include a template Scratch project file – these are available for download alongside the worksheet PDFs.*

## 6. Try the worksheets out for yourself

Your admin log on will also let you create projects yourself.

Go to <https://machinelearningforkids.co.uk/projects>

*Follow the instructions from one of the worksheets*

## 7. Check your group settings

Your group will have a number of limits set.

Go to <https://machinelearningforkids.co.uk/teacher>

The section “Restrictions” will list the main limits for your group.

*There will be a limit on the number of machine learning models your group can create at any one time. Models will automatically expire to help stop you exceeding this. The expiry time will be shown in the restrictions list.*

## 8. If you run into any problems...

If something goes wrong, check the list of known problems.

Go to <https://machinelearningforkids.co.uk/help>

The section “Known problems” will list the problems I currently know about, and what you can do to avoid them.

*If you’ve found a problem I don’t know about, it might be worth refreshing your page. It’s cliched, but that can work.*

If you’re still stuck, please let me know. Contact details are on the Help page.

	Introduces...	By getting kids to make a...	Teaching a machine to recognise...	What they will learn
Lesson 1: “Smart Classroom”	Confidence thresholds	Virtual Assistant	text	<ul style="list-style-type: none"> <li>How computers can be trained to recognise the intent behind writing.</li> <li>The way confidence thresholds are used to handle when the machine cannot recognise the meaning.</li> <li>How virtual assistants (e.g. Apple Siri, Amazon Alexa, Google Home) work.</li> </ul>
Lesson 2: “Make me happy”	Sentiment analysis	Scratch character	text	<ul style="list-style-type: none"> <li>How computers can be trained to recognise emotional tone.</li> <li>How supervised learning makes it easier to build systems that have to deal with unexpected input.</li> </ul>
Lesson 3: “Rock, Paper, Scissors”	Image recognition	Webcam game	images	<ul style="list-style-type: none"> <li>How computers can be trained to recognise pictures.</li> <li>The importance of variety in training machine learning systems.</li> </ul>
Lesson 4: “Sorting Hat”	Text classification	Harry Potter game	text	<ul style="list-style-type: none"> <li>How computers can recognise different types of language.</li> </ul>
Lesson 5: “Noughts & Crosses”	AI in games	Noughts and crosses	numbers	<ul style="list-style-type: none"> <li>How machines have been taught to play games since the 1960’s.</li> <li>Decision tree learning as a way for computers to learn how to play games.</li> </ul>
Lesson 6: “Judge a book”	Image recognition	Scratch game	images	<ul style="list-style-type: none"> <li>How effectiveness of a machine learning system can be measured by comparing performance against humans.</li> </ul>
Lesson 7: “Headlines”	ML testing	Test system	text	<ul style="list-style-type: none"> <li>How computers can be taught to recognise the source of writing</li> <li>How machine learning systems are tested.</li> </ul>
Lesson 8: “Top Trumps”	Collecting training data	Scratch card game	numbers	<ul style="list-style-type: none"> <li>How collecting training is used to make it easier to train computers than manually labelling training data</li> <li>How computers can learn to play games where the correct answer cannot be known.</li> </ul>
Lesson 9: “Tourist Info”	Training bias	Mobile holiday app	text	<ul style="list-style-type: none"> <li>The impact of training bias on machine learning systems and the ethical questions this introduces.</li> </ul>