Machine Learning For Kids :: Teachers' notes

Worksheet	Describe the glass
Activity	Train a computer to predict when you describe a glass as half-full or half-empty.
Objective	**Teach a computer to play a game** • Decision tree learning as a way for computers to learn how to play games.
Difficulty level	Beginner
Time estimate	45 minutes
Summary	Students train a model by playing a game in Scratch. The machine learning model will be trained based on how they play. They will see what the computer learns about their answers.
Topics	decision tree 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.
Access	Username and password for machinelearningforkids.co.uk

Class account will need:

API keys	None

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

- "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.
- Try to avoid your students all training with answers that are based on a 50% threshold. It will be more interesting if some students give very optimistic answers, while others give very pessimistic answers.
- This is a very simple project. Make it more complex for older students by encouraging them to invent their own projects. For example, they could make the project using more than two training buckets (e.g. train it to classify liquid amounts as "nearly empty", "half empty", "half full", "nearly full").
- For a more complex project, encourage students to consider the psychology behind how people answer the "glass is half full" question. There is room for a wide range of variables besides the amount of liquid, such as glass shape, liquid colour, etc.

General troubleshooting and help at https://machinelearningforkids.co.uk/help