

# Machine Learning For Kids :: Teachers' notes

<b>Worksheet</b>	<b>Top Trumps</b>
<b>Activity</b>	Train a computer to be able to play the Top Trumps card game in Scratch.
<b>Objective</b>	<b>Teach a computer to play a game</b> <ul style="list-style-type: none"> <li>Collecting training is easier than manually labelling training data.</li> <li>Computers can learn to play games where the correct answer cannot be known, by predicting the likelihood of each outcome.</li> </ul>
<b>Difficulty level</b>	Advanced The Scratch script is long and complex. Most of it is provided in a starter project file, but finding the right places to make changes needs care.
<b>Time estimate</b>	1 – 2 hours
<b>Summary</b>	Students will train the computer to play Top Trumps by playing the game in Scratch. The machine learning model will be trained based on the choices that they make while playing.
<b>Topics</b>	decision tree learning, reinforcement learning, categorical data

## 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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## Help

<b>Potential issues</b>	<ul style="list-style-type: none"> <li>The most common bug in student Scratch scripts is to make the wrong choice in orange drop-down blocks (e.g. choosing “you” instead of “computer”). Encourage students to copy carefully. Working in pairs can help avoid mistakes.</li> <li>The computer is trained using the decisions made by the student when they play. This is inverted when used by the computer to make decisions. (e.g. the computer chooses a move that will result in “lose” because the best move for the computer is one that results in the player “losing”).</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> </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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