Teacher Perspectives on How To Train Your Robot:
A Middle School AI and Ethics Curriculum
Appendix

In-Person Course Activities - Fall 2019 - [Educator Guide](#)

Day 1	Day 2	Day 3
Welcome (15 mins) Students are welcomed to the course and the stage is set for the type of activities they will engage in during the week	**Welcome (10 mins)** Students review what they learned yesterday and go over the activities for today.	**Welcome (15 mins)** Students review what they learned yesterday and go over ethical matrices and the activities for the day.
What is AI? (30 mins) Students discuss definitions of technology and artificial intelligence.	**Pb&J Recipe Algorithm (30 mins)** Students do the classic PB&J algorithm example to learn about writing instructions for computers..	**Ethical Matrices (30 mins)** Students learn about stakeholders and use ethical matrices to guide their moral reasoning about AI.
Ethical Dilemmas (60 mins) Students are introduced to moral reasoning with an ethical decision-making example.	**Algorithmic Bias Discussion (90 mins)** After watching and reading several sources students discuss the impact of biased algorithms on different groups.	**Self-Driving Robots (90 mins)** Students learn about closed-loop algorithms to teach their robots to navigate autonomously along a path.
Intro to Scratch and Robots (90 mins) Students follow tutorials to refresh their knowledge of programming and get to know their robots.	**Animal Recognition (60 mins)** Students use [Machine Learning for Kids](#)'s machine learning tools to teach their robots to play a simple card game.	**Final Project Research (30 mins)** Students conduct research and begin idea generation for their own robot projects.
Reflect (30 mins) Students reflect on what they have learned about AI and its role in society today.	**Reflect (10 mins)** Students reflect on what they have learned today about algorithmic bias in AI systems today.	**Reflect (30 mins)** Students set the criteria for the final project and reflect on their brainstorming to begin coming up with concrete ideas about what they will build with their robots.

Day 4	Day 5	Notes
Welcome (15 mins) Students create a list of tools to include in the "final project toolbox".	**Welcome (15 mins)** Students check in with each other about the work they need to do to finish their projects.	
Final Project: Planning (30 mins) Students choose a direction for their final project and begin planning what the major components of the project will be.	**Final Project: Finishing Up (120 mins)** Students put the final touches on their projects for the showcase.	
Final Project: Work Time (90 mins) Students start to build a first version of their final projects based on their plans.	**Final Project: Showcase Preparation (30 mins)** Students prepare to present the work they accomplished this week at the showcase.	
Final Project: Peer Review (30 mins) Students look at each others' projects to offer feedback	**Final Project: Showcase (60 mins)** Students present their robots to visitors.	
Reflect (15 mins) Students prepare a "final to-do list" for the next day's work.	**Reflect (15 mins)** Students reflect on the ethical and technical considerations that went into designing their robots, as well as their learning throughout the week.	

Online Course Activities - Summer 2020 - Educator Guide

Day 1	Day 2	Day 3
Welcome (15 mins) Students are welcomed to the course and the stage is set for design decision making through a game of "Would You Rather?"	**Welcome (5 mins)** Students share any examples of AI they may have encountered the previous day.	**Welcome (5 mins)** Students share how image recognition could be used in their future projects.
What is AI? (45 mins) Students discuss definitions of technology and artificial intelligence.	**Pizza Delivery App (40 mins)** Students create an algorithm that determines the best type of pizza to create based on data input from several questions.	**Ethical Matrices (40 mins)** Students learn about stakeholders and use ethical matrices to guide their moral reasoning about AI technology.
Ethical Dilemmas (30 mins) Students are introduced to moral reasoning with an ethical decision-making example.	**Intro to Image Classification and Algorithmic Bias (45 mins)** Students train an image classifier on several data sets of images. After watching and reading several sources students discuss the impact of biased algorithms on different groups.	**Intro to Text Classification (45 mins)** Students use a web app to explore how computers use word embeddings to make sense of language.
Intro to AI Blocks (45 mins) Students follow tutorials to refresh their knowledge of programming and get to know their robots.	**Animal Recognition (45 mins)** Students use image recognition to have their robots recognize pictures of different animals.	**Command Recognition (45 mins)** Students use speech recognition and text classification to teach their robots to respond to voice commands.

Day 4	Day 5	Notes
Welcome (5 mins) Students reflect on how text classification is used in their daily lives.	**Welcome (15 mins)** Students check in with each other about the work they need to do to finish their projects.	
Final Project: Brainstorm & Planning (25 mins) Students choose a direction for their final project and begin planning what the major components of the project will be.	**Final Project: Finishing Up (90 mins)** Students put the final touches on their projects for the showcase.	
Final Project: Work Time (105 mins) Students start to build the first version of their final projects.	**Final Project: Showcase (30 mins)** Students present their robots to visitors.	