UBC Geering Up Engineering Outreach

AI for Teachers

ACTIVITY: Bias in Artificial Intelligence

Subject: **ADST**	**Grades:** **4-7**	**Duration:** **45-60 mins**
Lesson Overview	Have students draw maps and compare them to see how people have different perspectives and how computers see the world through data. Then run through a short web activity which shows how unintentional bias can influence artificial intelligence	

Curriculum Ties (in addition to satisfying multiple core competencies)	**ADST** **Applied Technologies** • Select, and as needed learn about, appropriate tools and technologies to extend their capability to complete a task • Identify the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use • Identify how the land, natural resources, and culture influence the development and use of tools and technologies **Grades 6+** • Design can be responsive to identified needs. • Complex tasks require different technologies and tools at different stages. • Visual programming

Content Objectives	• Practice empathy by realizing that different people have different perspectives of the same thing. • Understand that computers see the world through data. • Understand that the data a computer receives is like a model of the world, where we have done and represented a problem for a computer. • Learn that data acts like a “map” for a computer. • The data we provide a computer may differ from person to person based on these perspective differences. • Appreciate that human biases can influence the decisions of artificial intelligence

Materials and Equipment Needed for this Lesson
∉ Paper ∉ Writing Utensils

Lesson Stages	**Learning Activities**	**Time Allotted**
Introduction	• You can introduce the topic by having a discussion about what maps are, what they are used for etc. • You can also take the lesson outside, do a walk around the school. What are the places in the school we walk past that are important. Why are they important? •	**10 mins**

Activity	• Have each student draw a map of their school. • Once they have done that, put them in groups to compare. Is there aspects that they didn't include that someone else did? • Why did you chose did include the information that you did? • Who could use this map? • This is a great opportunity to practice empathy. Each person might see different things in the world as being important to the world and their school and in their map and they might use the map differently. • Would your map be useful to a new student? Does it show all the features they may need? Such as classroom numbers, where the bathrooms are etc. • Now if an electrician came in to the school, could they use your map? Its very unlikely that any electrician would find your map useful. So depending on the problem you're trying to solve, the information that you need to solve it can be different. One map might not be good for every person who needs to use it. --- • Run through the Survival of the Best Fit activity • Discuss how this relates to the map you drew before. You may notice that the performance of artificial intelligence heavily depends on the *data* which is given to it. This data is chosen by humans, and has potential to be biased.	**30 mins**
Closure	• This activity demonstrates empathy,where we are able to see the world from the perspective of others and understand that their perspective could be different than ours. And while it may sound strange at first, a key part of understanding artificial intelligence and computers is to be able to empathize with the computer - being able to imagine what the world looks like from the perspective of a computer. Developing greater empathy will allow you to create solutions which better help the people they are designed to help (human empathy), as well as create a richer understanding of potential engineering problems (computer empathy). • A model is a simplified representation of the world, so it is good for some problems, but not others. • What we have done here, is starting to go through the process of turning the world around us into data that a computer that data can understand. We have tried to represent the world in a different way.	**5 mins**

	• We have also seen how oversights or biases during data collection can impact the decisions made by artificial intelligence.	