A User Study Survey Instrument

A.1 Page 1

Computers are getting smarter every year, but they could still use lots of help from humans to better learn new concepts. In this study, you will teach a computer about 4 different concepts.

For each concept, you will see five photos that either do or do not contain the concept. You will identify whether or not each photo contains the concept and then spend one minute writing sentences that explain what knowledge you used as human to reach this conclusion.

This explanation step is the most important. As humans, we are able to use a wealth of clues and prior information to understand a concept or object. Your job is to help the computer learn what clues it should be using to better understand what a new idea is. As you teach the computer more, it will be more capable of helping humans complete tasks.

A.2 Page 2 (Pages 2–4 repeat for each of 4 concepts, which are presented in randomized order)

Imagine you are trying to identify if a photo contains a CONCEPT. We are trying to make it so that a computer can automate this task for you in the future. To help the computer learn to complete this task itself, you must first help the computer correctly understand the concept from certain examples and explain to it what clues it should use to identify the presence of the concept or object in the future.

We will show you a sequence of five photos. For each photo, you will need to teach the computer two things:

1. What is the correct answer?
2. What knowledge did you use as a human to help you identify that this was the correct answer?

Be as descriptive and precise as possible! Teach the computer how you (as a human) were able to determine the correct solution to the task. It is helpful for the computer to know whether it's getting closer to, or getting further away from, its goal. Help direct it!

A.3 Page 3 (Pages 2–4 repeat for each of 4 concepts, which are presented in randomized order)

– Is there a CONCEPT in the image above?
() Yes () No () Unsure

Spend a minute explaining what information you used, as a human, to determine whether there is a crossroad in this image. Give as much detail as possible. Once a minute has passed, finish up your thought and then move on. ---

A.4 Page 4 (Pages 2–4 repeat for each of 4 concepts, which are presented in randomized order)

You have just taught the computer the CONCEPT through five different examples. Please respond to each statement below.

- I feel I have thoroughly taught the computer to identify whether or not future images similar to the five examples in this study represent the CONCEPT.
  () Strongly agree () Agree () Neutral () Disagree () Strongly disagree
- Why?
- I feel I have thoroughly taught the computer to identify whether or not any future image represents the CONCEPT.
  () Strongly agree () Agree () Neutral () Disagree () Strongly disagree
- Why?
- I left out information from some of my explanations for this concept because I had already taught the computer about it in a previous example.
  () Strongly agree () Agree () Neutral () Disagree () Strongly disagree
- Why?
- How did your understanding of the CONCEPT change over the course of the five examples?
- Having completed all five examples, would you want to change the explanations you gave for any of the examples?
- What additional information, if anything, have you *not* taught the computer about the CONCEPT that it might need to correctly classify whether or not images it encounters in the future represent that concept?

A.5 Page 5

You have just taught the computer four different concepts. Respond to the statement below.

- I left out information from some of my explanations because I had already taught the computer about it in a previous example.
  () Strongly Agree () Agree () Neutral () Disagree () Strongly Disagree
- Why?
- You have just taught a computer about four different concepts. What, if anything, would you have done differently if you were teaching a human about these concepts, rather than a computer?