

Student Comprehension Worksheet: Paint a Clearer Picture with AI

Directions: Read the online *Science News* article "[How artificial intelligence sharpens blurry thermal vision images](#)" and answer the following questions as directed by your teacher.

Before Reading

1. If given the opportunity, how likely is it that you'd choose to ride in a self-driving car? Would you feel more safe, less safe or equally safe riding such a car at night vs. at day? Briefly explain your reasoning.

2. What is a piece of equipment or technology that a self-driving car would require, but that would be optional or absent in a normal car?

During Reading

1. Thermal cameras work by detecting heat sources. To do that, they must sense particular wavelengths of light that our eyes cannot see. What kind of light do thermal cameras detect?

2. Regarding thermal imaging, what is "ghosting?" What problem does ghosting cause?

3. When scientists paired artificial intelligence (AI) with thermal-imaging technology, the technique produced more detailed images than produced by the thermal camera alone. What information did the AI reveal that the thermal camera on its own did not?

4. What extra or higher quality data might be available to self-driving cars using the type of AI described in the story?

- 5. Using current self-driving car technology, how might having many self-driving cars on the same road "confuse one another?" Why do researchers say AI technology could make self-driving car technology safer to scale up?**
- 6. Researchers point out that despite the new camera's potential, it's unlikely to appear in vehicles in the near future. Give three reasons why.**
- 7. Besides self-driving cars, in what other technology does Fanglin Bao hope to see this AI technology used?**

After Reading

- 1. Besides image analysis, what is another existing technology or technique that AI might improve? Explain your answer. In your example, does AI serve more to overcome limitations of the technology? Or does it elevate this technology, offering it new capabilities?**
- 2. A dichotomy is when we think of two things as having a rigid division between them (good vs. evil, for instance.) Dichotomies are sometimes used as literary devices or models to explain contrasted concepts. For example, in the article, Bao suggests a dichotomy that exists between day and night. Dichotomies sometimes oversimplify the contrasted ideas, however, making the concepts seem more distinct than they really are. Besides those already mentioned (day vs. night & good vs. evil), give an example of a dichotomy you've seen used either in science or in other aspects of life. How might such a dichotomy, if given only passing thought, oversimplify an otherwise complex pair of concepts?**