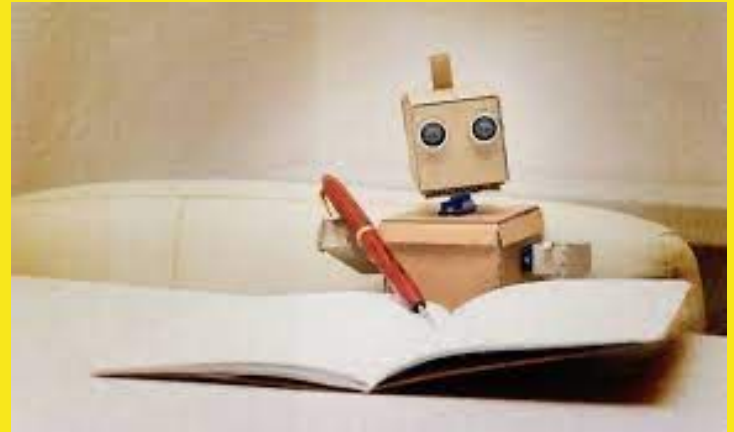


# The Ethics of AI and Grading

**Ian Scheffler + Michele Persaud**

# The Issue

Should AI be used in grading?



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**Which piece of feedback was  
written by a human?**

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# Piece of Feedback

## #1

Problem: Get user input using python.

Close. There is a minor error with your logic to get input from user.

This could be something like forgetting to convert user input to a float.

---

# Piece of Feedback

## #2

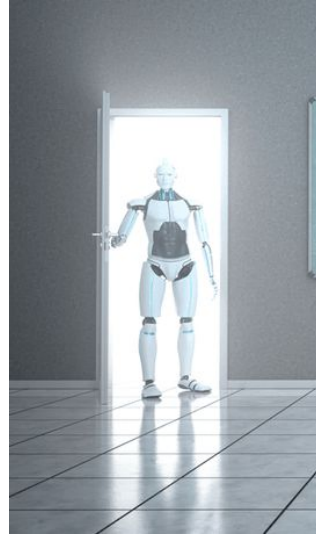
Problem: Draw waves of tiny blue diamonds across a black-and-white grid.

Seems like you have a small mistake. Perhaps you are running into a wall after drawing the third wave.

---

# Cons -

- Unfair Outcomes
  - In 2020 the IBO used AI to predict final student grades (~175,000 students)
  - Used historical results (assignments, grades, teacher predictions)
  - 15% protested results (suspiciously low scores; revoked college acceptances)
- Cheating or Inaccurate grades on assignments
  - Students (or parents) figure out the algorithm (scanning keywords)
  - Wide grading range
    - Edgenuity (0% no keywords; 100% one keyword)
- May replace teachers
- Can increase inequity (high income-AI and human teachers; others-device)



# Cons con't

- AI only works with very specific tasks
  - Unable to evaluate things it has never seen before
- AI field is not diverse
  - Information AI is fed may be biased or skewed
  - Creates one view of the world
- Does not address all learners
  - Nuances in answers eg: ELL/SwD (cognates)

TENURE-TRACK FACULTY at CS DEPARTMENTS of  
TOP UNIVERSITIES around the WORLD by GENDER,  
AY 2019-20

Source: AI Index, 2020 | Chart: 2021 AI Index Report

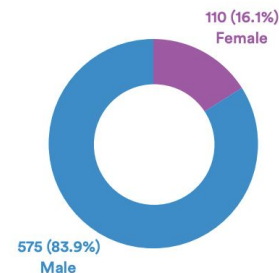


Figure 6.1.2

NEW U.S. RESIDENT AI PHDS (% of TOTAL) by RACE/ETHNICITY, 2019

Source: CRA Taulbee Survey, 2020 | Chart: 2021 AI Index Report

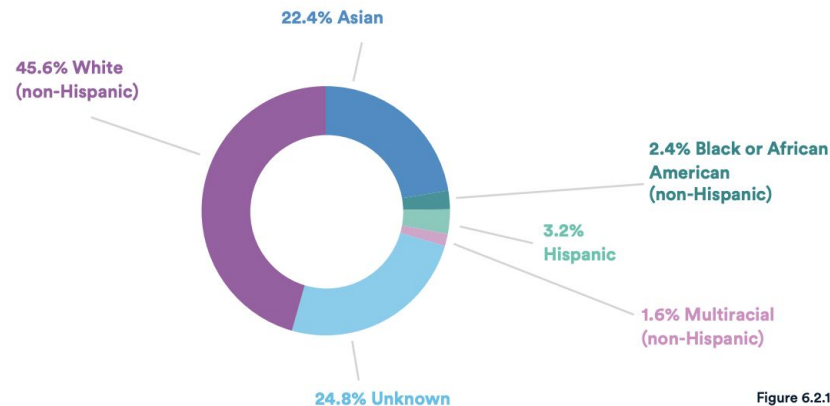
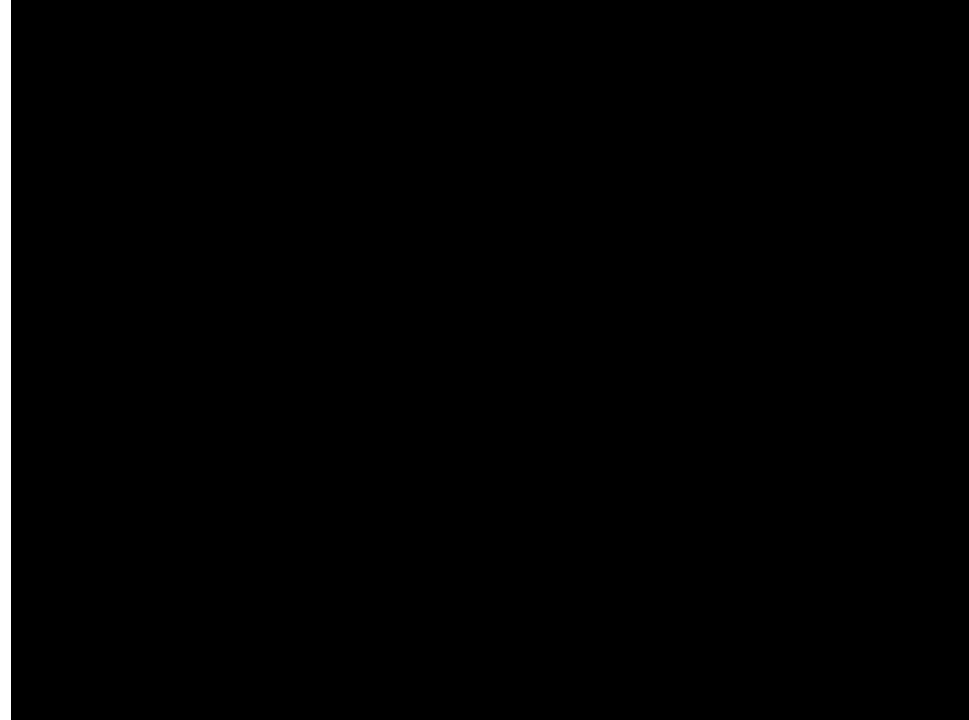


Figure 6.2.1

## Pro #1 - Saves Time!

- In 2020, the [University of Massachusetts at Lowell](#), rolled out [Gradeoscope](#)
- Instructors scan student work into PDFs
- [Gradeoscope's AI](#) groups similar answers, allowing professors to grade more quickly
- The AI applies a rubric--created by instructors--to each scanned answer





# Pro #2 - (Can) Expand Access to High-Quality Feedback

- In 2021, a lab at Stanford created ProtoTransformer, an AI that can learn how to give feedback
- Used in a Stanford MOOC to give feedback to 16k+ students
- The AI was trained on past midterms graded by human TAs
- Students agreed with the AI's feedback 97.6% of the time
- (Students in the course agreed with human feedback 96.7% of the time)

The screenshot shows a web browser window titled "Code in Place Feedback" with the URL "codeinplace.stanford.edu/diagnostic/feedback". The interface has a navigation bar with "Overview", "Question 1" (selected), "Question 2", "Question 3", "Question 4", "Question 5", and "Wrap-Up". Below the navigation bar are buttons for "Back", "Feedback", and "Next".

The main content area is divided into two panels. The left panel, titled "GETTING INPUT FROM USER", contains the following text: "This question requires you to get input from the user, convert it to a number, and save it as a variable. Did you correctly do all of these steps?". Below this is a feedback box with the text: "Close. There is a minor error with your logic to get input from user. This could be something like forgetting to convert user input to a float". At the bottom of this panel are thumbs up and thumbs down icons, and a text input field labeled "Please explain (optional):".

The right panel, titled "Your Solution", contains the following Python code:

```
def main():  
    # TODO write your solution here  
    height=input("Enter your height in meters: ")  
    if height < 1.6:  
        print("Below minimum astronaut height")  
    if height > 1.9:  
        print("Above maximum astronaut height")  
    if height >= 1.6 and height <= 1.9:  
        print("Correct height to be an astronaut")  
  
if __name__ == "__main__":  
    main()
```

Blue arrows point from text annotations to specific parts of the interface:

- An arrow points from "AI generated feedback" to the feedback box in the left panel.
- An arrow points from "Students evaluate the feedback" to the thumbs up/down icons.
- An arrow points from "Algorithm uses attention to highlight where in the code the error comes from" to the line `height=input("Enter your height in meters: ")` in the code panel.
- An arrow points from "Syntax error (missing \" here would prevent auto graders from being useful." to the line `if __name__ == "__main__":` in the code panel.

**Would you use AI to grade?  
Why or why not?**

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