



## [Issue #6](#) (open): [REVIEW] PAC Learning Or: Why We Should (and Shouldn't) Trust Machine Learning

[@wowjyu](#) on  
Apr 29, 2024 14:52: [opened]

[@wowjyu](#) on  
Apr 29, 2024 14:52:

### Conflicts of interest

- ☒ I declare that I have no known conflicts of interest with the authors.

### Reviewed version

[fef096a](#)

### Review

This article is an interesting introductory piece that explores how machine learning techniques can fail in three scenarios. The topic is well-motivated, and I fully support the authors' assertion that it is crucial for general public to understand the reasons behind the errors made by ML systems. For this purpose, the interactive "quiz" is an effective and engaging method for readers to explore these issues. It provides a clear and accessible way for readers to engage with and reflect on the vulnerabilities of machine learning (ERM in the particular context of this article).

I am generally supportive of this article; however, I recommend several improvements for clarity and detail.

### Clarify

- Game description: The game needs to be more detailed in the introduction. For example, it is not immediately clear that players are asked to drag a rectangle to interact with the game. Including detailed instructions about user interactions and goals would be beneficial.
- Animation issues: The animation process (i.e., the fade-in of points) is somewhat confusing. It is unclear how many points are to be drawn, which might perplex readers. Having a fast-forward button or a progress bar might help clarify the progression of points being displayed.
- Scroll interaction. The current setup updates the chart on the right whenever the corresponding text section head becomes visible in the browser window. This can be somewhat confusing and disruptive. To enhance clarity and user experience, I recommend triggering the update only when the corresponding text reaches the center of the window.

### Content

While the game presents an useful abstraction of a machine learning problem, its representation might be excessively abstract. At first glance of the game, one might ask - what is the graph showing? What does the x/y axis encode? The text briefly mentions that this graph is for deciding "men of medium height and weight"; however, a clearer connection between the text and the graph would enhance understanding.

Moreover, the "Why this is Important" section seems loosely related to the chart/game. Readers might mistakenly believe that the referenced Gender Shade example is linked to the adjacent chart, which it is not. To improve coherence, it would be beneficial to discuss this example within the context of the "training-testing mismatch" section, where it might be more relevant.

## Bugs

I sometimes triggered the error - Cannot read properties of null (reading 'x'), when clicking on the "TEST" button. It might has something to do with the animations - users clicked this button before all points were drawn.

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### Openness/Transparency

N/A

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### Submission categories

- ☐ Registered Report
- ☒ Replication Study
- ☐ Empirical Research - Quantitative
- ☐ Empirical Research - Qualitative
- ☐ Systems or design research
- ☐ Commentary
- ☐ Systematic Literature Review

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### Suggested outcome

Minor revisions: this paper requires some smaller changes, after which I am confident I would be able to endorse it.

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### Requested changes

To fix the programming bugs and minor UX issues in the interactive demo.

To provide detailed explanations and instructions on the "Four German Game".

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### ORCID

*No response*

@dylancashman on  
Dec 01, 2024 02:25:

Improved introduction in <https://github.com/journalovi/2024-Cashman-PAC-learning-game/pull/11>

@dylancashman on  
Dec 01, 2024 08:25:

Added note about how many points remain, and cleaned up some bugs in [#12](#)

@dylancashman on  
Dec 04, 2024 02:37:

Thank you for your review! I wanted to provide some notes on what I addressed in my revision.

1. Game description

I added a few paragraphs into the introduction to explain the game and motivate its connection to machine learning. I also updated the "Why this is important" section.

2. Animation issues

I added labels to the game showing how many points are displayed, and how many total points will be displayed.

### 3. Scroll Interaction

Using `idyll`, I was unable to add an offset to the triggering of events to the middle of the page. However, I added some more section breaks in the proof section to make it hopefully easier to read through. The first section break has an info button that explains that the events can be replayed by clicking on them, as well.

Why this is important

I did move the Gender shades example to the section where we discuss training-test mismatch. Great idea!

I also addressed the bug that you identified, thank you for finding that!

[@leibatt](#) on  
Mar 13, 2025 14:58: @wowjyu can you please review these changes and comment here?

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