



# ML Challenge 5

Brought to you by the makers of such favorites as...ML Challenge 4, ML Challenge 3, and ML Challenge 2

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# Background

- This one is a bit different:
  - 2 month timeframe
    - To put us on cycle again
  - Does not require any domain knowledge in physics
  - Great for someone just starting out with ML
  - Would be a really terrible idea to actually develop fully or employ
  
- Intrigued?.....



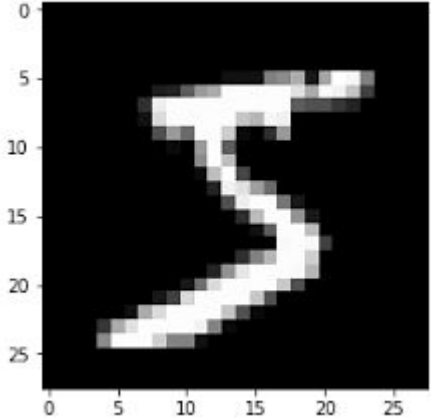
# The Goal

- Make a 3 function calculator!
- Wait what?
  - Yep 3 functions....all you need....

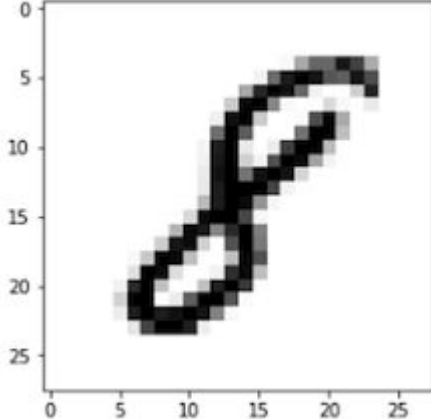


# The Goal

- Really the goal is to extend the MNIST dataset tutorials
  - But without having to generate operator symbols



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# How will we be judged?

- Sum of error squared over a set of problems (i)

$$\sum_i (\text{Submission}_i - \text{Correct}_i)^2$$

- The winner will be the submission with the smallest score
  - In the event of a tie the winner will be the model with the fewest number of parameters





# Any restrictions?

- Only a couple:
  - Your submission will be a jupyter notebook that we will run
  - There can be no mathematical operations done after the model's output and the writing of the answer to the file
    - E.g. you can **not** use built in operators on two numbers the AI determined a la MNIST
      - You **can** do things like look up the label from a one hot output



# When/what is due

- A jupyter notebook compatible with jupyterhub.jlab.org's

## Spawner Options

Select a notebook image

- The notebook must load your model and take in the problems (one problem per line), do any necessary preprocessing and produce a single numeric answer, writing that answer, in order, one answer per line, into a file to be judged

**This is all due August 5th at noon**



# Go Here for the data/write-up

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[https://halldweb.jlab.org/talks/ML\\_lunch/Jun2020/](https://halldweb.jlab.org/talks/ML_lunch/Jun2020/)