Questions/Checklist: (Add details as appropriate…)

1. Does the .zip file that contains the demo contain everything (for packages, this means the requirements.txt) required to run the entire demo on both colab and from a fresh conda install. The main source should be entitled demoN_topic.tex.

Yes. The file is incorrectly named though.

2. Are there comments in the Demo itself that point to the specific topic covered in lecture pointing to the exact conceptual scope of this demo?

Yes, this demo is well connected to the lecture material.

3. Does the demo try to align notation with lecture to the extent possible, and use comments to explain why and were the notation might differ from lecture?

Yes.

4. Does every cell in the demo run without needing the user to modify anything and do visualizations appear clearly? If not, give comments here…

There's a runtime error when loading the MNIST dataset:

```
---------------------------------------------------------------------------
RuntimeError                              Traceback (most recent call last)
<ipython-input-13-48ff7bade8c1> in <module>
      6
      7 # Load training data using transforms
----> 8 train_dataset = torchvision.datasets.MNIST(
      9     root="data",
     10     train=True,

/usr/local/lib/python3.8/dist-packages/torchvision/datasets/mnist.py in __init__(self, root, train, transform, target_transform, download)
    100
    101         if not self._check_exists():
--> 102             raise RuntimeError("Dataset not found. You can use download=True to download it")
    103
    104         self.data, self.targets = self._load_data()

RuntimeError: Dataset not found. You can use download=True to download it
```

It looks like it should be downloaded first, which can be achieved by setting download to True.

5. Does the demo use animations effectively where animations would help convey the relevant idea? If not, give comments here…

The demo clearly displays and explains various augmentation techniques. It may also be nice to include a training bar using the TQDM library when training the network.

Is the text in the demo written in correct written English — no spelling errors or grammatical mistakes? If not…

- The last sentence of Part 3: Advanced Augmentations is missing a period.
- So is "Notice that the image size before and after cropping is the same"
- In the first blurb:
    - In the first explanation I think "overfit on the training data" could be changed to "overfit to the training data"
    - Clean cut -> clean-cut
    - bluriness -> blurriness
    - Artifically -> artificially
    - "idealized version of images" -> "an idealized version of images"
    - Remove more from "we are approximating more what our data looks"

6. If there are images or drawings within the demo notebook:
    a. Does the demo also include a citation to where the image came from?

Yes

    b. If the image/drawing is not cited, is the source code used to generate the image/drawing included in the .zip file? (e.g. if the image was made using Adobe Photoshop, the photoshop source file should be present.)

n/a

    c. If the image is from somewhere else, does the license for that image permit its free use by others?

To the best of my knowledge, yes.

7. Is the math in the demo correct?
    a. Are there tests within the demo notebook for verifying the correctness of the math as implemented?

No math.

    b. Does the math match the approach taken in class, or when there is a difference (e.g. comparing PyTorch's implementation of momentum and how it is taught in lecture) are these explicitly called out clearly?

N/A

8. If there are calls to python libraries, are all the arguments explicitly specified? (even if you are using default values for parameters, it is important to have them be clearly visible in a demo so that students can see them)

It might be helpful to go through more of the transformation parameters or specify them more explicitly.

9. Is the code as written in the demo clear and well commented?

The utils.py is a nice touch and is well-commented. Overall the code is great.

10. Are the plots in the demo clear and comprehensive?
     a. Are there appropriate error-bars on plots that can reasonably have error bars? (if there is randomness involved, there probably should be error bars)

N/A
     b. Are the axes clearly labeled?

Yes
     c. Are the choices for axis scale (log, linear, etc.) correct to most clearly illustrate the phenomenon being illustrated?

Yes
     d. If there are a small number of points that are being connected with lines, are the points clearly marked

Not needed.

11. To fully explain and understand the concepts being engaged with using the demo, are there missing examples, calculations, plots, etc. that you feel would be nice to see? Have these been listed out at the end of the demo in a section: "What we wish this demo also had to make things clearer?" The reviewer should feel free to add suggestions here.

I think a more direct comparison of how augmentation acts as regularization would be cool. This could be done by adding a network that's trained on unaugmented images. This could've shown the regularizing effect more clearly, but might take a lot more time to train. Some of the images don't load for me in colab. I'm not sure why, because the path seems correct.

12. Any other comments on the demo that would be helpful to evaluate it or make it better for people who might want to learn this material? (Remember, our goal is for the demo to be available on the website along with the scribe notes for all to see.)

The training takes a long time. I think a pre-trained model would be really helpful in speeding up the demo, especially when the marginal accuracy gains are pretty low near the end. Overall great demo!