

Homework 5 Writeup

Declaration of Generative AI Use

Reminder of Course Policy

- The use of GenAI tools (e.g., ChatGPT, Grammarly, Bard) for completing any part of this course is discouraged.
- Using these tools is not needed to be successful in the class and could be detrimental to your learning experience.
- If you use them, you must cite the tool you used and explain how you used it.
- If you do not cite the tool, it is an academic code violation.
- We will be using special tools to detect cases of unattributed GenAI use.

Student Declaration

Have you used generative AI tools to complete this assignment:

YES ☐ NO ☒

If you answered YES above, describe what tools you used and what parts of the assignment you used them for below:

Example: I used ChatGPT to debug my convolution implementation

Implementation Detail

Accuracy Results (Task 1, Task 3)

Task 3 Accuracy

My results are summarized in Table .

Task	Accuracy
Task 1-5	35.67%
Task 1-6	27.1%
Task 1-7	85.13%
Task 3	94.00%

Task 2 Results

Task 2 Explanation

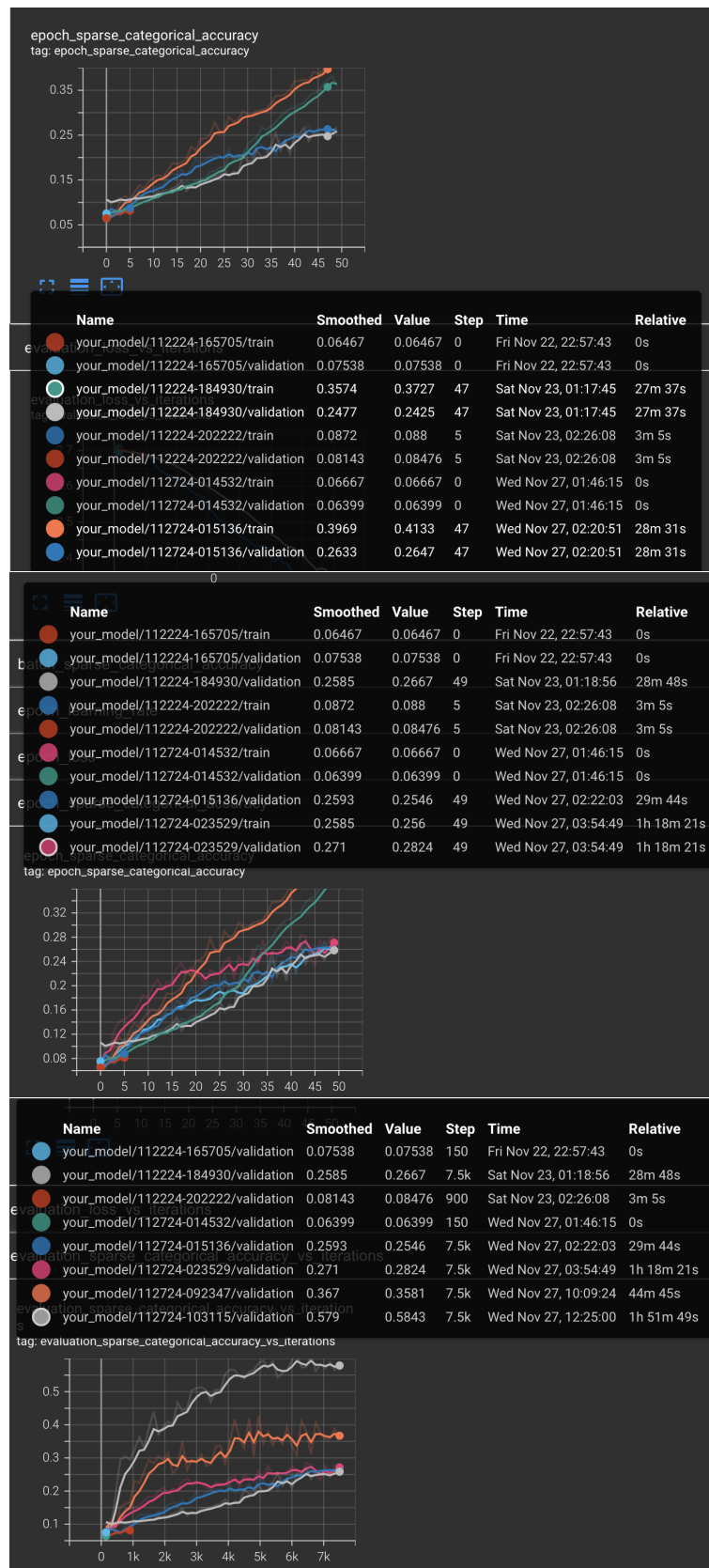


Figure 1: 1-5, 1-6, and 1-7 (from top to bottom). Color with the white circle around it in the key corresponds to the model.

```
=====
Total params: 14,714,688
Trainable params: 14,714,688
Non-trainable params: 0

- loss: 0.2328 - sparse_categorical_accuracy: 0.9400
previous maximum TEST accuracy.

ms/step - loss: 0.2328 - sparse_categorical_accuracy: 0.9400
```

Figure 2: Task 3 Accuracy Results



Figure 3: Two misclassified Images. Top is a bedroom misclassified as Industrial, bottom is a coast misclassified as an office

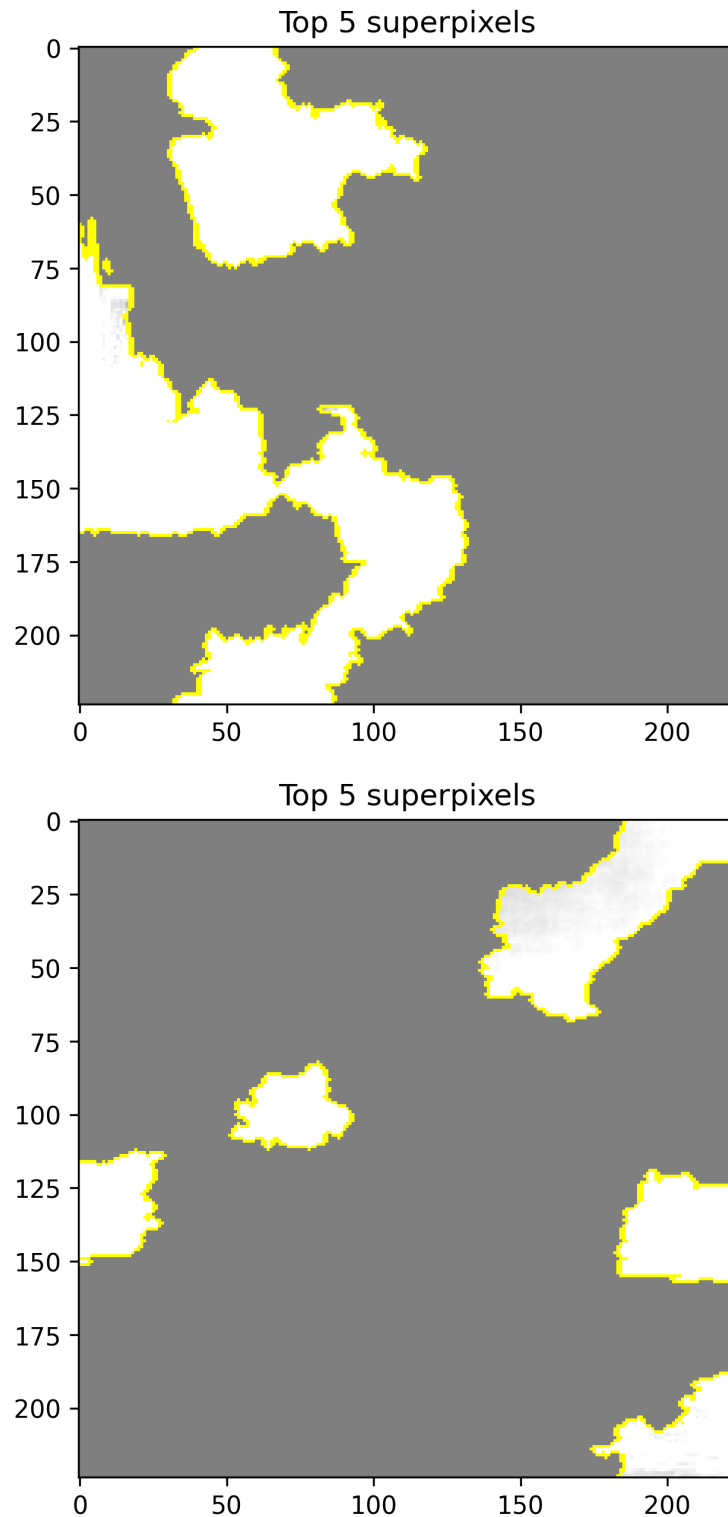


Figure 4: For each misclassification, the superpixels of the image are shown. The reason that the bedroom image was misclassified as an industrial image and the coast was misinterpreted as an office is because these regions of the image may have contained irrelevant or ambiguous features that somehow matched both the industrial, and coast class. This caused the misclassification.