AWS Module 3 Reflections

**Learning Insights**

Throughout these labs, one of the biggest machine learning concepts I discovered was the importance and power of residual layers. Before these labs, I hadn’t fully understood how critical residual connections are to keeping deep networks from breaking down as they get larger. They make training deeper models not only possible but efficient.

Another moment that really stood out was when I started looking into how backpropagation works and why it’s so essential for training. Finally understanding the process of calculating gradients and updating weights to minimize loss gave me a better grasp of what’s happening behind the scenes of model training.

These labs connected well to broader machine learning principles by showing me how core ideas like normalization, activations, optimizers, and loss functions come together in real models. Seeing them all in action while working with CNNs made the bigger picture much clearer.

**Challenges and Struggles**

One of the biggest technical challenges I ran into was understanding normalization—why it’s done and how it affects the data going into the model. I overcame this by asking for guidance through ChatGPT and getting step-by-step explanations until it finally made sense.

Through these labs, I developed better problem-solving strategies like slowing down and breaking things apart into smaller pieces, doing research, and experimenting directly with code to see how things change. I also started to rely on asking the right questions and using tools like ChatGPT to guide me when I hit walls. This made it easier to keep making progress when things got complicated.

**Personal Growth**

After finishing these labs, I feel like I understand machine learning concepts a lot more clearly than I did before. I can now follow how different parts of a neural network work together, from data loading to training to evaluation.

What surprised me most was how interesting everything ended up being. I expected it to be more technical and dry, but it turned out to be something I enjoyed diving into.

As for future use, these skills are going to help with any projects where image data or classification tasks are involved. Understanding CNNs, residual connections, and loss functions is a strong foundation for building more advanced models in the future. I can see this being useful in areas like computer vision, automation, and AI-based decision making.

**Critical Reflection**

If I were to repeat these labs, I honestly wouldn’t change much. I felt like my process worked well, and I was able to get through each challenge while learning along the way.

After finishing, I’m definitely interested in learning more about machine learning and deep learning. These labs made me realize how much more there is to explore, and now I’m curious about going deeper into topics like natural language processing, reinforcement learning, and advanced architectures.

Overall, these labs showed me how important it is to build models carefully and thoughtfully, and how techniques like residual layers make deeper, more accurate networks possible.