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Tricks of the Trade and How Technology is Making Life Easier

Before going through Module 3, I didn’t realize just how much computer vision is shaping the world around me. I had heard about things like facial recognition, self-driving cars, and AI powered security cameras, but I never really stopped to think about how they worked. This module helped me understand that computer vision is the technology that allows computers to see, recognize, and process images and videos, just like humans do. The difference is that computers need to be trained using a lot of data before they can make sense of what they’re looking at.

At first, I thought that teaching a computer to see would be easy. After all, humans recognize objects naturally. But this module showed me that for computers, it’s not that simple. A computer doesn’t have common sense or intuition, it only knows what it has been trained to recognize. For example, if you show a baby a picture of a dog, they might recognize other dogs just be noticing similar features. A computer, on the other hand, needs to process thousands, sometimes millions, of images before it can truly understand what a dog looks like from different angles, in different lighting, and in different settings.

One of the key lessons from this module was learning the different tricks of the trade that helps computer vision systems become more accurate. Developers and engineers use these techniques to improve AI’s ability to recognize objects and make smarter decisions. One of the most important tricks is image preprocessing. Before an image is fed into a computer vision system, it must be cleaned up so that the AI can focus on the important details. This includes adjusting brightness, removing background noise, sharpening edges, and resizing images so that the computer doesn’t get confused by unnecessary distractions. If a self-driving car’s AI is looking at a stop sign, for example, it should be able to recognize the stop sign even if it’s slightly faded or titled. Preprocessing makes sure the AI doesn’t mistake a red billboard for a stop sign just because they share a similar color.

Another useful trick is data augmentation, which helps train AI models using a variety of images without needing to collect millions of new ones. Instead of taking thousands of extra pictures of the same object, developers make small modifications to existing images, like flipping them, rotating them, cropping them, or changing their brightness, so that the AI learns to recognize objects from different perspectives. This helps AI from making mistakes when it sees an object in an unfamiliar way.

A third trick that stood out to me was transferring learning. Instead of building a completely new AI model from scratch, developers can take an existing model that has already been trained on millions of images and adjust it for a specific task. For example, if a hospital wants to develop AI that can detect lung cancer in X-rays, they don’t need to start from zero. They can take a model that already understands general medical images and tweak it to specialize in lung scans. This saves time and resources, making AI more accessible and useful in different industries.

Another major part of computer vision is feature extraction, this is how AI learns what to focus on in an image. For example, if you’re teaching an AI to recognize faces, it will learn to look at specific features like eyes, noses, and mouths. In self-driving cars, AI is trained to detect important objects like pedestrians, traffic signs, and road lanes so that it can react correctly to the real-world situations.

The more I learn about computer vision, the more I realized just how much it’s already improving our daily lives. The advancements in this technology are making things faster, safer, and more convenient in ways that we often don’t even notice. One of the biggest areas where computer vision is making a difference is healthcare. AI can scan medical images like X-rays, MRIs, and CT scans and highlight potential health issues faster than human doctors. This doesn’t mean that AI replaces doctors, but it does help them catch diseases earlier and with more accuracy. For example, AI has been trained to spot cancerous tumors in medical scans, sometimes detecting them before a doctor would have noticed them. This could save lives by allowing treatment to start earlier.

Learning about computer vision in Module 3 made me realize that this isn’t some futuristic technology, it’s already here, shaping the world around us. From helping doctors diagnose diseases to making self-driving cars smarter and improving security, computer vision is making life easier in so many ways. The more AI learns, the better it gets, and we’re only going to see more advancements in the future. Before this module, I thought AI was just something that tech companies worked on. Now, I see that it’s already everywhere, making things safer, smarter and more efficient. It’s exciting to think about what’s next and how these advancements will continue to change the way we live.