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Technology is increasing and computer vision is one of the most important part of AI. It enables computers to perceive and comprehend images, which in turn makes it possible to implement facial recognition, self driving cars, and medical image analysis. In Module 3, we identified the various resources that can be used in developing computer vision applications. It has means of interpreting images, identifying objects and analyzing the visual information and this has caused a change in most sectors. It is used in minor apps like face identity on phones to huge AI assisted systems that can assist doctors in detecting diseases at an early stage. When used correctly, developers can come up with effective AI driven solutions that enhance productivity and make life easier.

In Module 3, we learn about the basic tools that are used in computer vision development, including libraries, frameworks, and coding environments. These tools enable the developers to develop the applications without having to write all the code from the beginning. Some of the libraries that are used in this case include OpenCV, TensorFlow, and PyTorch, which enable processing of images, object detection, and the training of models, respectively, with a number of functions. This way, developers do not have to write several hundred lines of code; they can use these libraries to apply very complex image processing filters. On the other hand, frameworks offer a clear structure for developing machine learning apps because they contain essential components. This enables the developers to spend more time trying to find solutions to the problems and not in the process of coding every aspect of the solution. Jupyter Notebooks and cloud based spaces such as Google Colab assist in writing and testing code in real time, enabling people to work on projects together, try out AI models, and visualize data effectively. These tools not only help students and researchers but also play a big role in professional AI development.

Computer vision advancements make life easier in many ways. Face recognition technology is now used to unlock smartphones, secure banking apps, and even control smart home devices. Self driving cars use advanced AI models to detect traffic signs, pedestrians, and other vehicles, making transportation safer and reducing human errors. In the medical field, AI is revolutionizing healthcare by analyzing X rays, MRIs, and CT scans to detect diseases such as cancer at earlier stages than human doctors. AI can process thousands of images in minutes, providing accurate diagnoses and helping doctors make better treatment decisions. Another major area where computer vision is making an impact is retail and security. Many stores now use AI powered surveillance cameras that can recognize suspicious behavior and prevent theft. In some cashier less stores, AI cameras track what customers pick up, allowing them to leave without having to stand in line to pay. These technologies are transforming how businesses operate and improving customer experiences.

Computer vision has made life easier in many ways. Face identification secures banking apps, smartphones, and smart home devices. Self-driving cars use AI to detect traffic signs, objects, and other vehicles, reducing accidents. In medicine, AI analyzes X-rays, MRIs, and CT scans to detect diseases like cancer earlier than human doctors, providing faster and more accurate diagnoses. Retail and security have also evolved, with AI-powered cameras preventing theft and cashier-less stores tracking purchases so customers can leave without checkout lines. AI powered tools like Google Gemini Code and GitHub Copilot make coding even faster by suggesting code snippets and even completing code/errors. It’s a game changer. This not only reduces the time spent on debugging but it can even help developers focus on writing better and more efficient programs. Another important aspect of modern development is cloud based hosting platforms like AWS and Copilot. These platforms allow developers to train and test AI models without needing expensive hardware or powerful computers. Instead of setting up a large server room, developers can use cloud resources to handle complex tasks like deep learning model training, which would normally require a lot of computing power. This makes AI and machine learning more accessible to students, startups, and businesses of all sizes.

We are still in the early stages of AI and computer vision, meaning that the potential for future advancements is limitless. As technology improves, we can expect AI to become even more accurate and efficient in recognizing objects, analyzing data, and making real time decisions. Future AI systems may be able to interact more naturally with humans, understanding emotions through facial expressions and voice tone. In education, AI could assist teachers by grading assignments and providing personalized learning experiences for students. In construction and urban planning, AI powered drones could analyze building structures and monitor traffic patterns to improve city infrastructure. The possibilities are endless, and as more research and development go into AI, we will continue to see breakthroughs that make everyday life more convenient, efficient, and safe.

As computer vision technology continues to evolve, it will keep improving the way we live, work and interact with the world. From helping doctors detect diseases faster to making self-driving cars safer, these advancements are shaping the future. Understanding “the tools of the trade” is just the beginning to an endless possibility.