Camara’s used for object detection-

1. Logitech C920 (USB Webcam)

- This is one of the most popular webcams worldwide for object detection — especially for beginners, students, and prototype makers.

- It’s a Full HD 1080p camera, with good color quality and decent low-light performance.

-It connects over USB, so you just plug it into your laptop or desktop — no drivers, no network setup.

- Works smoothly with YOLO, OpenCV, TensorFlow, MMDetection — because these libraries can easily grab frames from any standard webcam.

- Where people use it:

- **Learning object detection basics (detecting objects at home, on desk, in small rooms)**
- **Demos during AI courses or presentations**
- **Small robot vision if USB connection is possible**

- Strengths: Cheap, easy to use, no setup-

- Limitations: No depth sensing, not for long distance or outdoor use

2. Hikvision DS-2CD2087G2-L (IP Camera)

- A leading choice for outdoor object detection, especially in security and traffic monitoring systems.
  - It's an IP camera, meaning it sends video over a network cable or Wi-Fi.
  - The resolution can go up to 4K or 8MP, with night vision and weatherproof design.
  - YOLO, Detectron2, MMDetection can connect to it using RTSP or HTTP stream links.

- Where people use it:

- Detecting people, vehicles, or intruders outdoors
- Traffic cameras for counting vehicles or reading plates
- Shop or warehouse security

- Strengths: High res, works day/night, wide coverag

- Limitations: Needs network setup, more expensive

3. Intel RealSense D435i (Depth + RGB Camera)

- This camera doesn't just see color images — it can measure the distance of objects too, giving you 3D point clouds.

- It's often used in robotics, where a robot not only needs to detect an object but also understand *how far* and *where* it is.

- Works well with OpenCV, ROS, Detectron2, TensorFlow when depth info is important.

- Where people use it:

- **Warehouse robots picking objects from shelves**
- **Drones or small robots avoiding obstacles**
- **AR/VR applications that need spatial awareness**

- Strengths: Gives depth + RGB in one stream

-Limitations: Costly compared to webcams, needs more processing

4. ZED 2 (Stereo Camera)

- **A very powerful stereo vision camera — like two eyes — that gives highly accurate depth + RGB data over large distances.**
- **Often used in autonomous vehicles, drones, mapping systems where the system must understand the environment in 3D.**
- **Supported by robotics libraries, Detectron2, MMDetection with custom pipelines.**

-Where people use it:

- **Self-driving car tests**
- **Drones doing terrain mapping or obstacle avoidance**
- **Large robot navigation**

- **Strengths: Long-range 3D vision, high precision**
- **Limitations: Expensive, needs powerful PC**

5. FLIR One Pro (Thermal Camera)

- A compact camera that captures thermal images — showing heat rather than visible light.

- Useful when you need to detect living things (humans, animals) or machinery in dark or smoky environments.

  - Works with custom object detection models, sometimes combined with YOLO or TensorFlow for safety applications.

- Where people use it:

- Firefighting robots or drones
- Wildlife detection at night
- Industrial plant safety monitoring

- Strengths: Can see in total darkness, through smoke

  - Limitations: No normal color image, lower image resolution

6. Basler ace acA1920-40gc (Industrial Camera)

- A high-speed, high-precision camera for industrial machine vision.
  - Used in factories where fast-moving objects (like parts on a conveyor) need to be detected, inspected, or measured.
  - Works with OpenCV, custom detection models; paired with strong lighting and controlled environments.

- Where people use it:

- Factory assembly lines for defect detection
- Checking labels, barcodes, or part positions
- High-speed counting or sorting

- Strengths: Super clear, no motion blur at high speed

- Limitations: Expensive, not for casual use

7. **Raspberry Pi Camera Module v2**

- A small, low-cost camera that connects directly to a Raspberry Pi.

- Great for lightweight, low-power edge AI projects like mini robots or IoT sensors.

- Works with OpenCV, TensorFlow Lite, YOLO small models on Raspberry Pi.

- Where people use it:

- **Tiny robots that detect objects**
- **Smart home devices (e.g., door sensors)**
- **Edge AI detection where size + power matter**

- Strengths: Tiny, cheap, low power

- Limitations: Lower quality than full webcams or IP cams