

Hardware Stack

Computer : Jetson Orin Nano

The Jetson Orin Nano is a compact, high-efficiency edge AI computer featuring a 6-core Arm 64-bit CPU paired with an NVIDIA GPU, giving up to ~67 (lol) TOPS of AI inference performance while drawing between about 7 W and 15–25 W of power depending on configuration. It includes 8 GB of 128-bit LPDDR5 memory with high bandwidth, support for storage via microSD and external NVMe, and rich I/O such as multiple USB 3.2 ports, Gigabit Ethernet, and dual MIPI-CSI camera connectors for direct camera input — making it well-suited for real-time vision tasks like driver monitoring

Link:

<https://www.nvidia.com/en-us/autonomous-machines/embedded-systems/jetson-orin/nano-super-developer-kit/>

Camera : IMX219 (need to do more research to find the most optimal camera module. The interface definitely needs to be MIPI CSI and not USB. Still have to take in factors like resolution (3-8 Mp) and field of view (90deg-140deg), don't want to spend more than \$50 on the camera) MIPI CSI cameras are widely used in embedded vision systems for their high performance and low latency

Link:

<https://www.arducam.com/b0179-arducam-imx219-wide-angle-camera-module-for-nvidia-jetson-board.html>

Power Supply : 20000mAh 100W or 130W power supply

https://www.amazon.com/UGREEN-Power-20000mAh-Portable-Charger/dp/B0C3GTMX5M?utm_source=chatgpt.com

Or

amazon.com/Portable-Charger-Retractable-20000mAh-Digital/dp/B0FJ7Y7TN8/ref=sr_1_4?dib=eyJ2IjoiMSJ9.1pZJD7FlgeZ1KL427ZHc0MQowd76H2Z7Xz2mDYUj0DCvW2ENvjZsVmf3qyhEs-qCeDrk2QMj32l6sUNM8N9g-F0Ts5pEOo5j9h1aZlfnGdu86UEsApGmk0vjm68j3h-bkA_cKHJXxeUp_yvOtePBFzgYJVpMBgbYlodbZiey7Zh0KaeaO7fIUshprp6HhWRFETmr3xqXGlu5jmA52QXDFIBV5JZxVsmiy2-l-eD3Vg4.HM6gzim43T82Cfpe5Stt7ZL0W3McDMmaaQgv5QPscG4&dib_tag=se&keywords=20000mAh+100W+power+supply&qid=1768424993&sr=8-4

Power Management : PD Trigger Cable (To maintain stable voltage and connect USB-c powerbank output to Jetson Orin Nano's Barrel jack input)

https://www.amazon.com/Universal-Adapter-Trigger-Display-Netbook/dp/B0FNMV127Y/ref=sr_1_4?adgrpid=186897607176&dib=eyJ2IjoiMSJ9.JB-5BOBVX1wujq852ysh3AMboXo41QTpaQjRpOXaiRTGPO9nbLNMLXxe4djSgNOawkl6SFRZFRaaHrii5uQaJFBmdd9HRhtt5NV38QQZq8qKcBWUyXI2t0IUyOBC1EDPCuYFRISCo5EUic6ry39dEi4phbS5Cf31NP6hCHhiz9lo8IHUvRW-wQSJPTg_DlrUeqajduklnntzGmxOodLrqBqaVKzch98jEuU-AQajJxTU.7iq6kA4yEHzmT-GcKx3wzhe6tm4XbNGcjHTGKc3P7xw&dib_tag=se&hvadid=779639558306&hvdev=c&hvexpln=0&hvlcophy=9032158&hvnetw=g&hvcijid=16326458956039321019--&hvqmt=e&hvrnd=1632645895603

[9321019&hvtargid=kwd-2266995805423&hydadcr=948_1014953063_2340534&keywords=usb-c+pd+trigger+cable&mcid=396e089edffc3c90a8ffe8871d6a0c71&qid=1768412099&sr=8-4](#)