AI Starter Kit for Jetson Orin Nano

- Dedicated voice interaction system
- Common board design, no soldering
- 38 detailed tutorials
- 30 different functional components
- 8MP HD camera + dual servo motors
- Additional I2C, UART, and IO Interface

An Integrated Intelligent Platform for
AI Teaching and Applications

Catalogue

Product Info

AI Starter Kit for Jetson Orin Nano, built on the Jetson platform, is not only a powerful AI edge computing device but also a comprehensive platform for learning, development, and hands-on practice. Harnessing the robust AI computing capabilities of the NVIDIA Jetson Orin Nano, this AI kit features an 11.6 inch IPS display, an 8MP gimbal camera, and an AI voice interaction system. It includes 30 functional modules and 38 carefully designed Python courses that progress from basic to advanced levels, covering sensor fundamentals and AI visual recognition. With hands-on instruction ranging from Python basics to practical vision applications, it provides an ideal entry point into the world of artificial intelligence.

Main features

- Based on the Jetson Orin Nano core board, it boasts powerful AI edge computing capabilities.
- The built-in AI voice module enables natural conversation. It seamlessly handles intelligent Q&A, voice commands, and personalized chat, unlocking the potential of voice AI.
- This kit combines a gimbal control system and an 8MP camera with AI models to enable target tracking and face tracking. It offers an in-depth exploration of visual AI and serves as a development platform for applications like smart monitoring, robot navigation, and automated recognition.
- Housed in a stylish, portable case, the kit is designed for easy carrying and storage, empowering you to engage with AI anywhere and at any time.

Hardware Overview

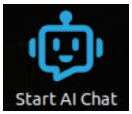
1. Speaker
2. Monocular Camera
3. Servo
4. Buzzer
5. 8*8 RGB Matrix
6. Stepper Motor
7. Photoelectric Counter
8. Vibration Motor
9. Tilt Switch
10. Without Jetson Core Control Board
11. Touch Sensor
12. Accelerometer & Gyro
13. Barometer
14. Hall Sensor
15. LCD
16. NTC
17. PIR Motion Sensor
18. Temperature & Humidity Sensor

*Pictures are for display only

19. Ultrasonic Ranging Sensor
20. Relay
21. Gas Sensor (MQ2)
22. NFC
23. Infrared Remote
24. Light Sensor
25. Rotary Encoder
26. Joystick
27. Linear Potentiometer
28. Microphone
29. Button
30. LED
31. I2C
32. UART
33. IO
34. 4-Digital Display

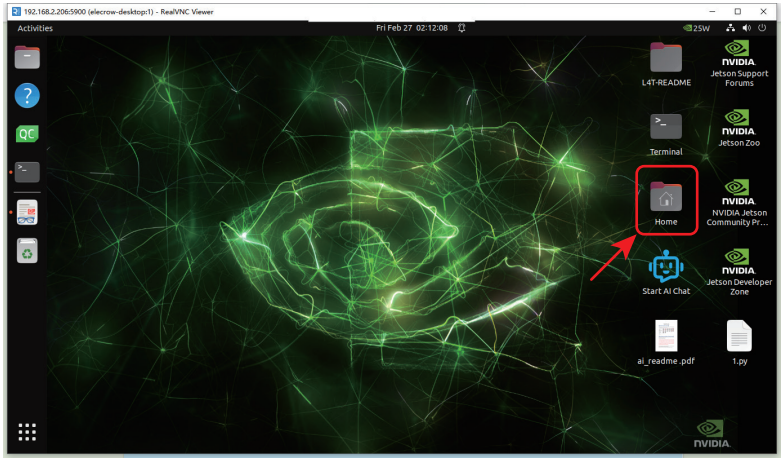
AI Chat

Ready to start a free-flowing conversation with AI? Just open the **"Start AI Chat"** app! Here, you can: Have AI write poems, tell stories, or generate creative copy for you; Get answers to anything from everyday tips to professional knowledge; Hold the "Touch Sensor" anytime to exit the chat and return to the real world. Before you begin, don't forget to spend a few minutes reading the **"ai_readme.pdf"** — start smarter and dive in with ease!

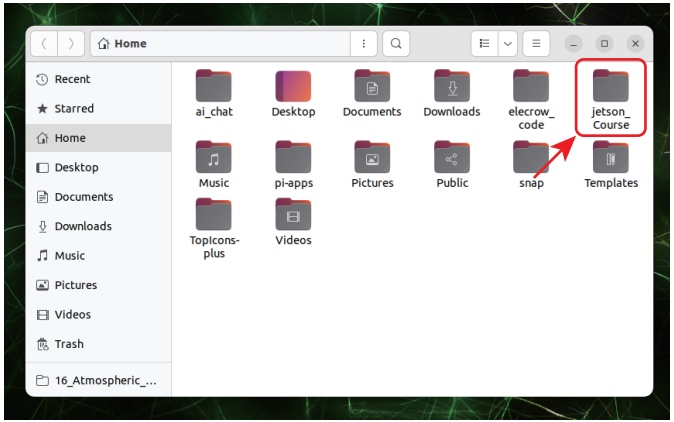


Learning Courses

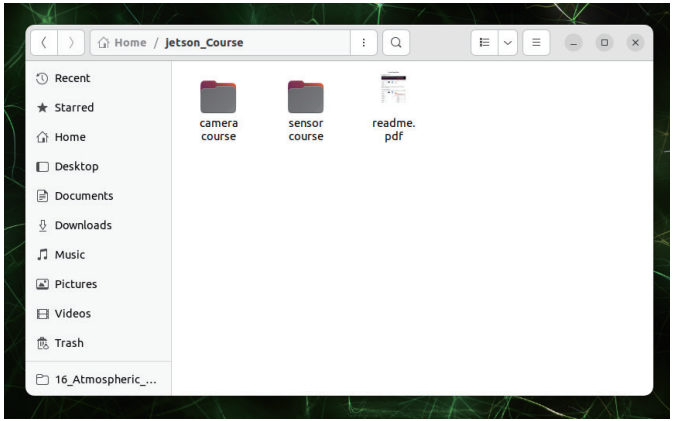
After experiencing free-flowing conversations with AI, are you now curious about our sensor and camera courses? Don't worry—I'll guide you step by step to find them! You can easily discover the "sensor course" (which takes you into the fascinating world of smart device sensing) and the "camera course" (where you'll learn to master visual recognition and image processing). Before you start, don't forget to spend a few minutes reading the "readme.pdf"—it'll help you get up to speed more easily and quickly!



1. Find and open the "jetson_Course" file

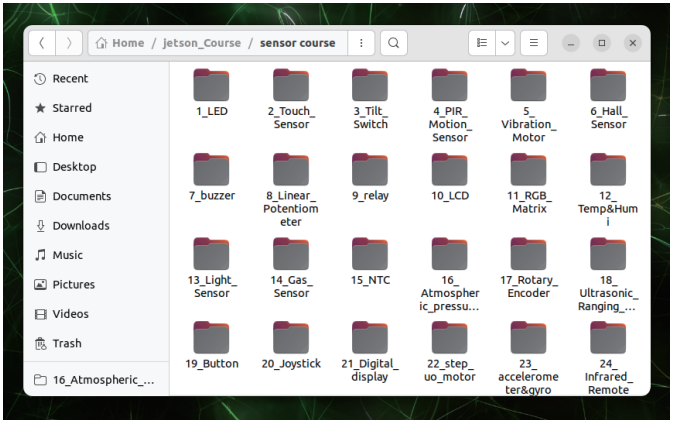


2. You can see the "sensor course" and "camera course" files. Please read "readme.pdf" before use.



Sensor Courses

Sensor course includes 25 sensor lessons covering various common sensor modules, such as temperature and humidity detection, light sensing, sound control, and display output. Through engaging hands-on projects, the course helps students master programming logic and hardware interaction. Students will not only grasp the basics of sensors but also rapidly improve their development skills.

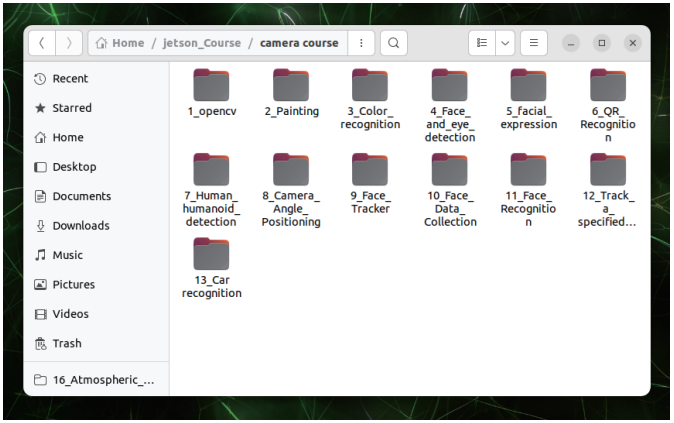


Lesson 1	LED	Lesson 10	LCD	Lesson 19	Button
Lesson 2	Touch_Sensor	Lesson 11	RGB_Matrix	Lesson 20	Joystick
Lesson 3	Tilt_Switch	Lesson 12	Temp&Humi	Lesson 21	Digital_display
Lesson 4	PIR_Motion_Sensor	Lesson 13	Light_Sensor	Lesson 22	Step_uo_motor
Lesson 5	Vibration_Motor	Lesson 14	Gas_Sensor	Lesson 23	Accelerometer&gyro
Lesson 6	Hall_Sensor	Lesson 15	NTC	Lesson 24	Infrared_Remote
Lesson 7	Buzzer	Lesson 16	Atmospheric_pressure_sensor	Lesson 25	NFC
Lesson 8	Linear_Potentiometer	Lesson 17	Rotary_Encoder		
Lesson 9	Relay	Lesson 18	Ultrasonic_Ranging_Sensor		

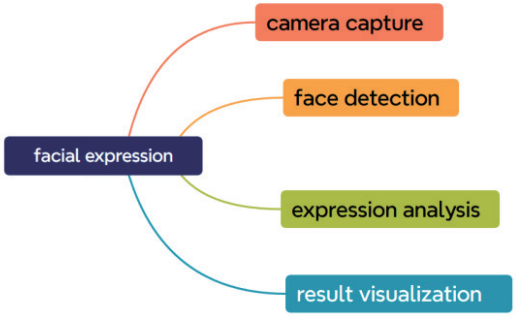
Sensor Name	Description
Tilt Sensor	Utilizes the effect of gravity on internal sensitive elements to convert changes in tilt angle or status into electrical signal output.
PIR Motion Sensor	When the infrared radiation within its field of view changes, it generates a weak electrical signal. This output signal can be used to detect movement, trigger alarms, or activate equipment such as motors.
Hall Sensor	A magnetic sensor based on the Hall effect, which converts magnetic field information into electrical signals.
RGB Matrix	A WS2812-style RGB LED matrix containing 64 pixels arranged in an 8×8 grid, connected to the Jetson board via GPIO 10. It uses the TEGRASOC pin numbering mode designed specifically for Jetson devices.
Gas Sensor	Gas concentration causes changes in the sensor's resistance. With the help of an external ADC or built-in circuit, the sensor's analog signal is converted into a digital value that is easy to process and interpret.
Rotary Encoder	Converts rotational motion into electrical signals, used to measure angle, position, speed and direction. It is essentially a digital interface for mechanical motion.
Joystick	The joystick generates a varying voltage based on analog input on the X-axis and Y-axis. This voltage can be read by an analog-to-digital converter and converted into a position value of the joystick.
LSM6DS3TR Sensor	This sensor integrates a 3-axis accelerometer, a 3-axis gyroscope, and a temperature sensor, capable of simultaneously detecting motion, orientation, and environmental conditions.
Other	More sensors can be learned about in the Sensor Course.

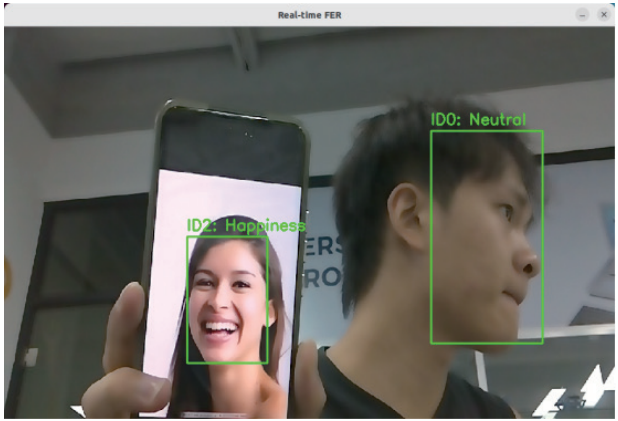
Camera Courses

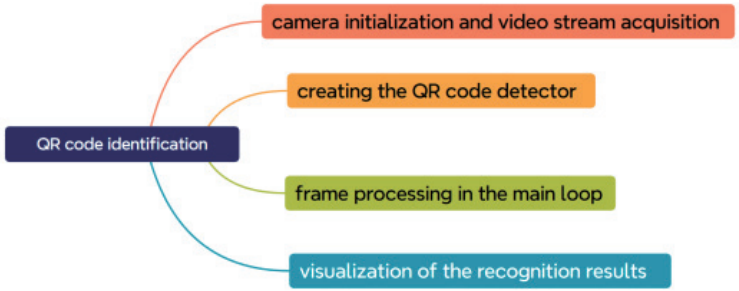
Camera course includes 13 camera lessons covering key applications such as object recognition, motion detection, and object tracking. Through practical case studies, it delves into the core principles and technical details behind AI vision technology. By integrating image processing with hardware interaction, it helps students deeply understand visual recognition processes and cultivate solid, practical AI skills.

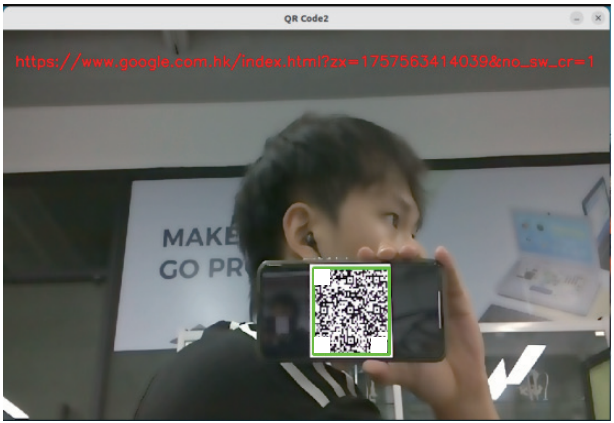


Lesson 1	Opencv	Lesson 6	QR_Recognition	Lesson 11	Face_Recognition
Lesson 2	Painting	Lesson 7	Human_humanoid_detection	Lesson 12	Track_a_specified_face
Lesson 3	Color_recognition	Lesson 8	Camera_Angle_Positioning	Lesson 13	Car recognition
Lesson 4	Face_and_eye_detection	Lesson 9	Face_Tracker		
Lesson 5	Facial_expression	Lesson 10	Face_Data_Collection		


facial expression
camera capture
face detection
expression analysis
result visualization


Real-time FER
ID0: Neutral
ID2: Happiness


QR code identification
camera initialization and video stream acquisition
creating the QR code detector
frame processing in the main loop
visualization of the recognition results


QR Code2
https://www.google.com.hk/index.html?zx=1757563414039&no_sw_cr=1

Main Parameters

Main Processor	Jetson Orin Nano (excluded in the kit)
Screen	11.6”IPS Screen
Resolution	1366*768
Camera	IMX219 8MP
Crowtail Interface	I2C* 2, UART* 1, IO* 2
Jetson Board Interface	Type-C port, Gigabit Ethernet port, DC Port, HDMI Port, USB-A ports* 4, MIPI CSI camera ports* 2
Operating Temperature	-20~70℃
Power	9~19V, 5A MAX
Weight	1585g
Dimension	300×200×100 mm
Target Audience	Students, Teachers, Hardware enthusiasts
Application Scenarios	Ideal for learning AI programming, Jetson Orin Nano basics

Package List

AI Starter Kit for Jetson * 1	NFC Card * 1	IR Remote Control * 1	22-pin FPC Cable* 2
Jetson DP&USB Adapter Board * 1	128G SD Card* 1	40-pin GPIO Cable* 1	24-pin FPC Cable* 2

FAQ

1. What is the User password ?

The password: elecrow

2. How to install Jetson Orin Nano ?

Refer to this video tutorial: https://www.youtube.com/watch?v=TUO_CVyMXrw

3. How to flash the SD card or SSD ?

Refer to this video tutorial: https://github.com/Elecrow-RD/AI-Starter-Kit-for-Jetson-Orin-Nano-with-Common-Board-design

4. How to obtain technical support?

If you have any problem about how to use it, you can connect to techsupport@elecrow.com to get technology support.