

AIoT Smart Home Kit

സംഗ്രഹം

AIoT Kit introduces pre-connections between The Main AIoT Controller and The Kit's Devices For easy to use and fast working with the kit while focusing on The Software layer objectives. Kit's provides a 2D model of the living room of a modern home. Supports cloud-based speech recognition and audio playback, Provides 4 sensor blocks interfaces with different configurations.



പ്രവർത്തനം

നിന്നു പ്രവർത്തനം

പ്രവർത്തനം നിലനിർത്തുന്നതിന് GR അനുബന്ധം:

- » Raspberry Pi OS (a Debian-based operating system for Raspberry Pi)
- operating system for Raspberry Pi)

പ്രവർത്തനം പരിപാടി:

- » **AJG**
 - Zsh : a shell designed for interactive use.
 - Powerlevel 10K : a theme for Zsh.
 - Tmux : a terminal multiplexer.
 - Peco : an interactive data filter
 - Powerline : a statusline plugin for vim, and provides statuslines and prompts for several other applications, including

zsh, bash, fish, tmux, IPython, Awesome, i3 and Qtile

» **അനുബന്ധം :**

- GCC : The GNU Compiler
- JDK : includes tools for developing and testing programs written in the Java programming language and running on the Java platform
- NodeJS : a JavaScript runtime built on Chrome's V8 JavaScript engine.
- Python3 : high-level, interpreted, interactive and object-oriented scripting language.

- Clang : provides a language front-end and tooling infrastructure for languages in the C language family

» **GC:**

- Visual Studio : IDE for C++ development
- Neovim : hyperextensible Vim-based text editor
- Geany : a powerful, stable and lightweight programmer's text editor

» **Antl carpgw:**

- MQTT : an OASIS standard messaging protocol for the Internet of Things (IoT)
- BlueZ : Bluetooth stack, support for the core Bluetooth layers and protocols
- Mtr : a network diagnostic tool.
- Nmap : a command-line tool for network exploration and security auditing
- Ipraf : an ncurses-based IP LAN monitoring tool
- Samba : provided secure, stable and fast file and print services for all clients using the SMB/CIFS protocol.
- Blynk server : a platform with iOS and Android apps to control The Raspberry Pi over the Internet.

» **Msjrgnbcg :**

- PortAudio : audio I/O library.
- Sox : sound processing program
- OpenCV : a real-time optimized Computer Vision library
- Google Assistant : Provide voice commands, voice searching, and voice-activated device control
- NumPy : a comprehensive mathematical functions.
- Matplotlib : a comprehensive library for creating static, animated, and interactive visualizations in Python.

» **Pwf nh ?G**

- Jupyter Notebooks : a web-based interactive computing platform
- NumPy : For comprehensive mathematical functions
- Anaconda : For data science and machine learning
- Pandas : For data manipulation and analysis

- Matplotlib : a plotting library for the Python
- SciPy : For scientific computing and technical computing.
- Gym : a collection of test problems.
- Scikit-learn : For machine learning with Python
- Tensorflow : For machine learning and artificial intelligence.
- Keras ; Provides a Python interface for artificial neural networks.
- Seaborn : For making statistical graphics in Python.

» **I g'qJdppw:** a Library for Kit's modules

F_pbu_pc Qccag g_rnh q

M_g ?GR Antl rpijcp B_qcb nh P_qbcbpw Pg 4 Mnbj B :

- » **APS :** Broadcom BCM2711 Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- » **EPS :**
 - Broadcom VideoCore VI
 - H.265 (4kp60 decode), H264 (1080p60 decode, 1080p30 encode)
 - OpenGL ES 3.1, Vulkan 1.0
- » **P?M:** 4GB LPDDR4-3200 S DRAM
- » **U gF g**
 - 2.4 GHz and 5.0 GHz IEEE 802.11ac wireless (Dual band)
 - backward compatibility to 802.11a/b/g/n
- » **Bjs crmmf :**Bluetooth 5.0, Bluetooth Low Energy (BLE)
- » **Gf cp cr :** Gigabit Ethernet 943 Mbps
- » **Pmpq:**
 - 2 x micro-HDMI 2.0 (up to 4Kp60 supported).
 - 4-pole stereo audio and composite video port.
 - 2 x USB 2.0.
 - 2 x USB 3.0.
 - 1 x USB-C.
 - Gigabit Ethernet.
 - Camera Serial Interface (MIPI CSI)
 - Display Serial Interface (MIPI DSI)
- » **GM:** GPIO,UART ,I2C,SPI,3 Channels ADC
- » **Qmp ec:** Micro-SD card slot for loading operating system and data storage

Gcjs bcb Ppc-Antl carcb Mnbj cq

- » **Fsnogw ?l b Rncp_rspc Gcl qnp**
Grcp_ac : Digital
- » **Rcxr JAB Grcp_ac**: I2C
- » **RF R JAB Grcp_ac**: HDMI
- » **P@ Gcl qnpGrcp_ac**: Digital
- » **BS GR Gcl qnp Grcp_ac**: UART
- » **Jgfr Gcl qnpGrcp_ac**: Analog
- » **E_qGcl qnpGrcp_ac**: Digital
- » **Rnsdf l cvp_bc Grcp_ac**: I2C
- » **2xGcpvmMnnpGrcp_ac**: PWM
- » **F?L Grcp_ac**: Digital
- » **JCB Grcp_ac**: Digital
- » **JCB B_pGrcp_ac**: PWM
- » **Qns l b Grcp_ac** : Digital Microphone and 2 speakers
- » **A_ncp** : Raspberry Pi Camera Module

V2 Official 8 Megapixel HD

- » **Gcl qnp Mnsjc Bjnai q** : 4x Sensor Modules Holder

Optional Modules Pack

Code: (IOT - 003.1)

- » RGB LED Type-A Plugin Module
- » PIEZO Type-A Plugin Module
- » Distance Sensor (Ultrasonic Eco) Type-A Plugin Module
- » CO2 Sensor Type-A Plugin Module
- » Flame Sensor Type-A Plugin Module
- » Laser Type-A Plugin Module
- » Digital Thermopile (IR) Type-A Plugin Module
- » Pixel Display Type-A Plugin Module
- » Microwave Motion Detection Sensor Type-A Plugin Module
- » IR Receiver Type-A Plugin Module

Qxcpnd r q

- Learning about programming with python and C/C++
- Learning about Keywords, Syntax Structure, Variables, Constants, Selections, Iterative control structures, Functions, Parameters and Classes.
- Learning about problem solving through the supported exercises about Basic Flow, Repeat structures with counter conditions, Logical Conditions, Iteration, Nested Loops, Arrays of 1-D/2-D, Sorting, and advance applications
- Learning about AI with python.

- Audio files playback, and output
- How to use google text to speech converter, google assistant
- how to use system modules (sensors, actuators, displays) to implement a wide range of experiments.
- learning about pandas, numpy, and matplotlib,.
- learning about supervised and unsupervised learning.
- leaning about ANN, DNN, CNN.
- Learning about tensorflow

Gnrc nf B c j y cpw

- AIoT Smart Home Kit (IOT-003)
- Hard copy user manual

Mrgn q

- Digital Content (BI-01)
- Optional Modules Pack (IOT - 003.1)