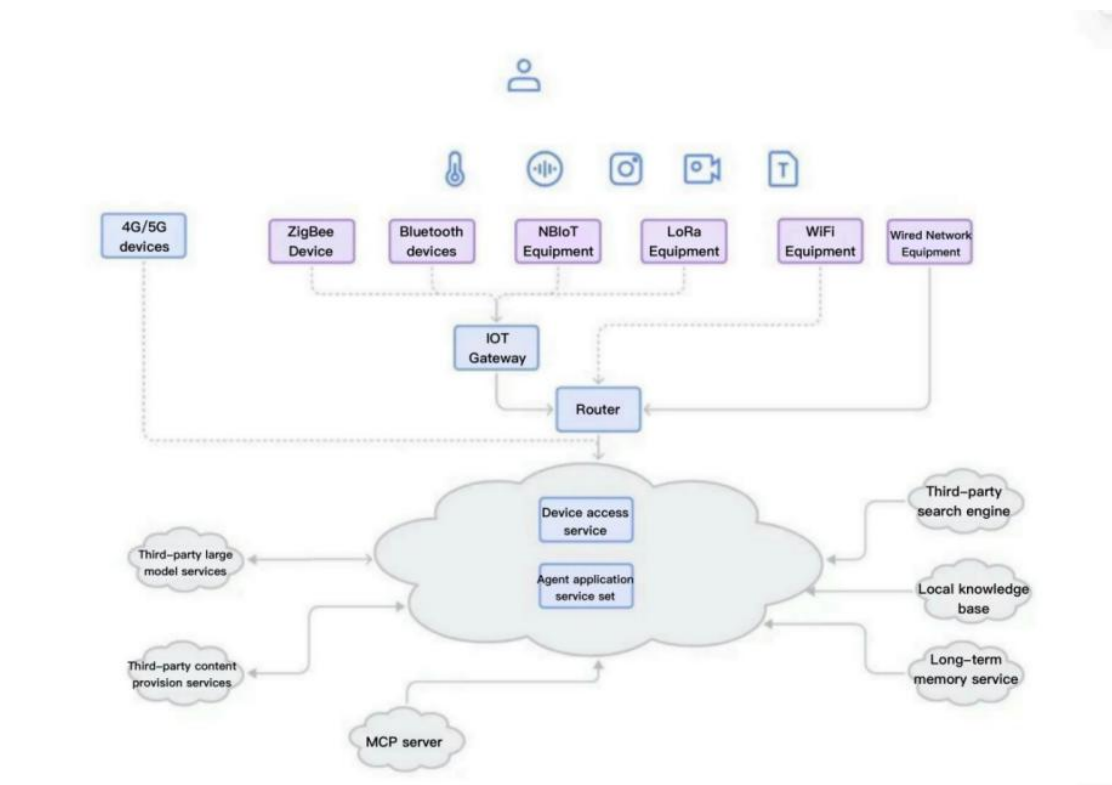# NextBigSeek IoT Intelligent Conversation System

Project Introduction

👉[Zero-level setup of intelligent voice control devices, beginner's tutorial [Bilibili]](#)

NextBigSeek IoT Intelligent Agent System is a core operating system for multimodal intelligent devices. Relying on the MQTT communication protocol and WebSocket streaming conversation technology, it enables efficient interconnection among devices, intelligent agents, and APPs. It supports full-scenario intelligent applications such as voice interaction, device control, and scheduled reminders.

Version Description

The current version is v2.x, with stable protocols. Its main features include a complete WebSocket streaming conversation interaction and an MQTT device management channel.

Core Advantages

• **Dual-Protocol Collaboration**: MQTT is responsible for device management and command delivery, while WebSocket enables low-latency streaming

conversations.

•   **End-to-End Security**: Triple protection including device authentication, data encryption, and Token validity control.

•   **Multimodal Interaction**: Supports multiple forms of input and output such as voice, text, and scheduled tasks.

•   **Extreme Compatibility**: Compatible with the entire ESP32 chip series and more than 70 types of open-source hardware.

•   **Flexible Extensibility**: Supports custom tool coding, voice parameters, and interaction processes.

•   **Offline Fallback Capability**: Core functions like local scheduled reminders and basic control are available when the network is abnormal.

Implemented Functions

•   **Multi-Network Support**: Full adaptation to networks such as WiFi, 4G/5G, Bluetooth, Zigbee, and LoRa.

•   **Offline Voice Wake-Up**: Supports customization of two wake words (default: "Hi, Espressif").

•   **Dual-Protocol Communication**: WebSocket streaming conversation combined with MQTT device control ensures real-time interaction and stable communication.

•   **Multimodal Interaction**: Full-process voice conversation based on ASR (Automatic Speech Recognition), LLM (Large Language Model) intelligent reasoning, and TTS (Text-to-Speech) voice synthesis.

•   **Intelligent Device Control**: Supports various hardware operations including volume adjustment, light control, and scheduled tasks.

•   **Cross-Device Compatibility**: Compatible with multiple chip platforms such as ESP32-S3/C3/P4 and Guoxin Micro.

•   **Multi-Language Support**: Switch between more than 30 languages including Chinese, English, and Japanese to adapt to global scenarios.

•   **Low-Power Design**: Automatically enters sleep mode after one minute of inactivity to reduce device energy consumption.

•   **Flexible Configuration**: Supports web-based customization of parameters such as wake words, voice roles, and scheduled tasks.

•   **Stable Reconnection Mechanism**: Automatically retries within 1 second after WebSocket disconnection to ensure connection reliability.

Supported Hardware

•   GX8006 chip and supporting development boards

•   Espressif official development boards: e.g., ESP32-S3

- Custom development boards: Any hardware equipped with ESP32-C3/S3/P4 chips and having microphone, speaker, and Wi-Fi/4G connectivity capabilities